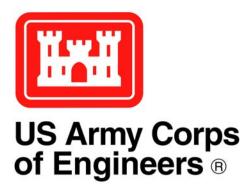
Scoping Document

Fargo-Moorhead Metropolitan Area Flood Risk Management Environmental Impact Statement



Prepared by: U.S. Army Corps of Engineers St. Paul District 190 Fifth Street East, Suite 401 St. Paul, Minnesota 55101-1638

September 2009

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1.0 INTRODUCTION

1.1 PROJECT BACKGROUND

This Scoping Document was prepared to address alternatives, issues and other important information pertaining to the problematic flooding in the Fargo, North Dakota-Moorhead, Minnesota metropolitan area.

As directed by congress, the U.S. Army Corps of Engineers, St Paul District (USACE), is preparing an Environmental Impact Statement (EIS) under the terms of the National Environmental Policy Act (NEPA) for the Fargo-Moorhead Metropolitan Area Flood Risk Management Feasibility Study.

The Fargo-Moorhead Metropolitan Area is located in the Red River of the North Basin. This study is authorized by a September 30, 1974, Resolution of the Senate Committee on Public Works.

A Reconnaissance Report for the Fargo-Moorhead metropolitan area was approved by the Corps Mississippi Valley Division on April 08, 2008. Based on the recommendations contained in the Reconnaissance Report, the City of Fargo, the City of Moorhead, and the Federal Government entered into a Feasibility Cost Share Agreement on September 22, 2008. The feasibility study is cost shared 50/50 between the two non-Federal sponsors and the Federal Government. Funds to initiate the feasibility study were provided in the Consolidated Appropriations Act, 2008, approved December 26, 2007 (Public Law 110-161).

The study will produce a decision document in the form of a feasibility report and associated NEPA document in accordance with the Corps Planning Guidance Notebook, ER 1105-2-100, and the Project Management Plan. The feasibility study will investigate measures to reduce flood risk and analyze the potential for Federal participation in implementing a flood damage reduction project in the Fargo-Moorhead Metropolitan Area.

The feasibility study will focus on reducing flood risk in the entire Fargo-Moorhead Metropolitan area.

The USACE issued a Notice of Intent in the Federal Register on May 5, 2009.

1.2 RIOR STUDIES, REPORTS, AND PROJECTS

a. Reports

Since the 1940s, the Corps of Engineers and others have prepared numerous reports on the Red River of the North basin. The following reports contain the most relevant information for the current effort:

1. House Document 185, 81st Congress, 1st Session, dated May 24, 1948. This report proposed a comprehensive plan for the Red River of the North basin. The plan included channel improvements, levees and floodwalls in Fargo and Moorhead. Other components of the plan included the Orwell Reservoir on the Ottertail River in Minnesota; channel improvements on the lower Sheyenne, Maple and Rush Rivers in North Dakota; channel improvements on the Mustinka, Ottertail, Wild Rice, Marsh and Sand Hill Rivers in Minnesota; channel improvements

along the Bois de Sioux and upper Red Rivers near Wahpeton, North Dakota/Breckenridge, Minnesota; and local flood protection works on the Red River in Grand Forks, North Dakota/East Grand Forks, Minnesota. The study found that channel improvements along the lower 31.6 miles of the Wild Rice River in North Dakota were economically justified, but the majority of affected local interests did not support the project, so it was not recommended. The report specifically recommended no further investigations in the Buffalo River basin and several other basins in Minnesota.

- 2. Section 205, Flood Control Reconnaissance Report, Red River of the North at Fargo, North Dakota, Corps of Engineers, May 1967. This study evaluated the potential to build a portion of the levee in Fargo that had been approved as part of the 1948 comprehensive plan but was later omitted from the constructed project. The study concluded that the proposed project was not economically feasible and did not warrant further Federal involvement at that time.
- 3. Fargo-Moorhead Urban Study, Corps of Engineers, May 1985. This study was a cooperative Federal, State and local planning effort aimed at developing viable solutions to water and related land resource problems, needs and concerns for 1980 to 2030. The study area encompassed 13 townships in Cass County, North Dakota, and Clay County, Minnesota. The study addressed water supply, water conservation, flood risk management, energy conservation and water resources data management. The study evaluated the potential to construct levees, floodwalls and channel modifications in Fargo and Moorhead. The report concluded that extremely long levees or floodwalls would be required to ring the urban areas to provide adequate protection from larger floods, and the costs would greatly exceed the damages prevented. Therefore, Federal participation in Fargo and Moorhead flood risk management projects was not recommended. However, the report did support further studies for flood control in Harwood and Rivertree Park, North Dakota.
- 4. "Living with the Red," International Joint Commission, November 2000. In June 1997, following record-setting flooding on the Red River of the North, the governments of Canada and the United States asked the International Joint Commission (IJC) to examine and report on the causes and effects of damaging floods in the Red River basin, and to make recommendations on means to reduce, mitigate and prevent harm from future flooding." The IJC established the International Red River Basin Task Force to undertake the necessary studies. The task force produced its report in April 2000. The IJC's report, entitled "Living with the Red," was completed in November 2000. These reports included discussion of the flooding in the Fargo-Moorhead area. The report cited hydraulic and hydrologic analyses conducted after the 1997 flood that indicated flood risks in the Fargo-Moorhead area were likely greater than previously thought. The report supported a basin-wide flood mitigation approach including reduction in flows, strengthening of existing protection structures, and use of other techniques. The report recommended that Federal, State and local governments should "expedite the study of flood risk potential and implement plans for flood protection measures for the Fargo-Moorhead area."
- 5. Reconnaissance Study, Red River Basin, Minnesota, North Dakota, South Dakota, Corps of Engineers, September 2001. This study, supported by supplemental information, was approved

in October 2002. The study recommended three initial feasibility studies to be followed by additional studies throughout the basin. Only the initial three studies were approved in 2002. The additional proposed studies would be considered for approval on the basis of additional 905(b) analyses. The Fargo-Moorhead and Upstream feasibility study, currently underway, was one of the initial studies recommended and approved in the reconnaissance study.

- 6. Final Environmental Impact Statement (FEIS) for the Red River Valley Water Supply Project, U.S. Department of the Interior, Bureau of Reclamation, December 21, 2007. The purpose of the proposed project is to meet the comprehensive water quality and quantity needs of the Red River Valley through the year 2050. The needs were identified as municipal, rural and industrial water; water quality; aquatic environment; recreation; and water conservation measures. The preferred alternative would import water to the Red River basin from the Missouri River via the Garrison Diversion and the Sheyenne River.
- 7. Fargo-Moorhead Downtown Framework Plan Update, Fargo-Moorhead Council of Governments, City of Fargo, and City of Moorhead, June 2007. This report builds upon earlier planning efforts in both Fargo and Moorhead. Many of the concepts presented depend on implementation of effective flood risk management strategies.

b. Current Studies

The following studies are being conducted:

- 1. Fargo-Moorhead and Upstream Feasibility Study, Corps of Engineers. The study began in August 2004. The study area is the entire headwaters of the Red River of the North upstream (south) of the Fargo-Moorhead metropolitan area. The major tributaries are the Mustinka, Bois de Sioux, and Ottertail Rivers in Minnesota and the Wild Rice River in North Dakota. The study is evaluating alternatives that would restore wetland habitat and reduce flood damages. The major underlying assumption is that a system of surface water storage sites upstream of Fargo-Moorhead would reduce flood stages and flood damages downstream. It is also assumed that water storage could be accomplished in ways that would restore aquatic ecosystems and increase habitat for wildlife. Phase 1 analyses, completed in June 2005, showed that distributed flood storage could provide significant economic benefits, but additional study of environmental benefits is needed to justify a Federal project. The North Dakota State Water Commission and the City of Moorhead are jointly sponsoring the study. Additional cost-share partners include the Southeast Cass Water Resource District; Richland County Water Resource District; Red River Joint Water Resource District; city of Fargo; Buffalo-Red River Watershed District; Bois de Sioux Watershed District; Minnesota Department of Natural Resources; Minnesota Board of Water and Soil Resources; Minnesota Pollution Control Agency; South Dakota Department of Game, Fish, and Parks; and Red River Basin Commission.
- 2. Fargo Southside Flood Control Project, City of Fargo, North Dakota. Since the 1997 flood, the city of Fargo and the Southeast Cass County Water Resource District have been planning for a flood risk management project to protect developments in the area south of Fargo and north

and west of the Wild Rice River up to 4 miles south of its confluence with the Red River. Several alternatives have been explored, including combinations of levees, diversion channels, channel modifications, and flood storage.

- 3. Oakport Township, Minnesota. The Buffalo-Red River Watershed District is working on a flood risk management reduction project for Oakport Township. The project would be designed to protect areas of town to a level equal to the 1997 flood plus 3 feet. The watershed district is still finalizing levee alignments for two ring levees on either side of Oakport Coulee. The project would also include buying some homes that cannot be protected by the levee system. A Corps of Engineers study performed under the Section 205 Continuing Authority was terminated in December 2002 after it was determined that national economic benefits were insufficient to support further Federal efforts.
- 4. Flood Insurance Study Update, Federal Emergency Management Agency (FEMA). FEMA is updating the flood insurance maps for the Fargo-Moorhead area. As a result of recent flood events and revised hydrologic and hydraulic modeling, FEMA is likely to increase the 1-percent-chance flood elevation on the order of 1 foot above the current administratively determined elevation.

c. Existing Water Resource Projects

- 1. The Lake Traverse project, including White Rock Dam and Reservation Dam, provides flood storage at the headwaters of the Bois de Sioux and Red River of the North. The project was authorized by the 1936 Flood Control Act, and construction was completed in 1948. The project is operated by the Corps of Engineers, St. Paul District.
- 2. Baldhill Dam and Lake Ashtabula provide water storage for flood control and water supply on the Sheyenne River. The project was authorized by the 1944 Flood Control Act, and construction was originally completed in 1951. The dam was modified in 2004 to raise the flood control pool by 5 feet. (The pool raise was part of the Sheyenne River project.)
- 3. The Orwell Dam provides water storage for flood control and water supply on the Ottertail River. The dam was included in the Corps' 1947 comprehensive plan for the Red River basin and authorized by the Flood Control Acts of 1948 and 1950. Construction of the dam was completed in 1953; it provides 8,600 acre-feet of storage.
- 4. Fargo levees: The Corps participated in a permanent flood control project completed in Fargo in 1963. The project was recommended in the Corps' 1947 comprehensive plan for the Red River basin and authorized by the Flood Control Acts of 1948 and 1950. The project included four channel cutoffs, the Midtown Dam, and a 3,500-foot levee east of Fourth Street South between First Avenue South and Tenth Avenue South. The top of levee is at approximately a 40.0-foot stage. The city later extended the levee south to Thirteenth Avenue. Fargo has several other publicly and privately owned sections of levee throughout the city. The current line of protection has top elevations that vary from a stage of 30 feet to 42 feet, but several reaches are

at or below 37 feet. (Note: the proposed new FEMA 1-percent-chance flood stage is expected to be approximately 39.3 feet.)

- 5. Moorhead levees: There are no federally constructed levees in Moorhead. The Corps proposed an 1,800-foot-long levee in the 1947 comprehensive plan for the Red River basin. It was authorized by the Flood Control Acts of 1948 and 1950, but the city declined to participate in the project. The city has built four small levees and several lift stations and control structures on storm water lines that can be closed or operated during high-water events. The city has also installed valves on the sanitary sewer lines at several individual flood-prone residences to prevent floodwater from inundating the system. The city also builds emergency levees when necessary.
- 6. The Sheyenne River project was authorized by the 1986 Water Resources Development Act. The project originally included four components: a 5-foot raise of the Baldhill Dam flood control pool; a dam to provide approximately 35,000 acre-feet of storage on the Maple River; a 7.5-mile flood diversion channel from Horace to West Fargo, North Dakota; and a 6.7-mile flood diversion channel at West Fargo. The Southeast Cass Water Resource District and the St. Paul District, Corps of Engineers, signed cost share agreements for the West Fargo Diversion project in 1988 and the Horace to West Fargo Diversion in 1990. The projects were essentially completed in 1993 and 1994. A pump station was added to the West Fargo project in 2003 and emergency generators were provided in 2007. The Maple River dam was deauthorized in 2002 for Federal participation, and the Southeast Cass Water Resource District completed the project without Federal assistance in 2007. These projects protect the cities of Horace and West Fargo and the west side of Fargo from Sheyenne River flooding. From Horace to West Fargo, the system is designed for a 1-percent-chance event plus 2 feet. At West Fargo, the channel and left bank levee contain the 1-percent-chance event plus 2 feet, and the right bank levee is higher, providing the city with protection from the Standard Project Flood plus 3 feet. Although these features reduce the risk associated with Sheyenne River flooding, these cities are still potentially affected by floods on the Wild Rice and Red Rivers that are larger than the 1% chance event.
- 7. A Section 208 (1954 Flood Control Act) clearing and snagging project was completed in Fargo-Moorhead in 1991 to remove trees affected by Dutch elm disease. Dead and dying trees were removed along a 9.7-mile reach of the Red River of the North.
- 8. Three Section 14 (1946 Flood Control Act) emergency streambank protection projects were completed in Fargo between 2001 and 2003. Erosion from the Red River of the North occurred at three separate project locations. At Reach A, erosion along 4,100 feet of riverbank threatened a levee near 37th Avenue. At Reach B, erosion along a 950-foot reach threatened Kandi Lane and North Broadway and utilities located beneath them. At Reach C, erosion along a 1,900-foot reach threatened Elm Street between 13th and 17th Avenues North and the utilities located beneath it. The erosion progressed to within 50 feet of the roadway. The projects involved shaping the banks and placing rockfill or granular fill and riprap along the eroded areas.

- 9. Two Section 206 (1996 Water Resource Development Act) aquatic ecosystem restoration projects were implemented to improve fish passage over two dams on the Red River within the metropolitan area. Rock slope fishways were constructed at the 12th Avenue North Dam and the 32nd Avenue South Dam in 2002 and 2004, respectively. A similar fishway was constructed at the Midtown Dam in 1998 without Corps construction assistance.
- 10. A Section 205 (1948 Flood Control Act) small flood control project is under construction for Fargo's Ridgewood neighborhood. The project will tie into a recently reconstructed floodwall at the Department of Veterans Affairs hospital.

1.3 DEFINITION OF AN ENVIRONMENTAL IMPACT STATEMENT

An EIS is a written document required by NEPA to be prepared for "major federal actions significantly affecting the quality of the human environment." Major federal actions are defined in the regulations implementing NEPA as actions "with effects that may be major and which are potentially subject to Federal control and responsibility" (40 CFR 1508.18). An EIS describes the purpose and need for an action, any alternatives that were considered in detail (including no action), the nature of the environment to be affected, and the nature and significance of the environmental effects of a proposed action and alternatives. Mitigation measures must also be described for any effects determined by the agency to be significant under the standards set in the regulations.

1.4 DEFINITION OF SCOPING

Scoping is a vital part of the NEPA process, and is one of the first steps undertaken when planning an EIS.

- It is an "early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action" (40 CFR 1501.7).
- It provides agencies with a method to determine the scope of analysis in an EIS, meaning the nature of the actions, the alternatives, and the impacts to be analyzed.
- It helps agencies to "identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review" (40 CFR 1501.7).
- It involves Federal, State, and local agencies, affected Indian tribes, the proponent of an action, and other interested persons (40 CFR 1501.7).
- It is one of the 17 methods of reducing excess paperwork, and one of the 12 methods for reducing delay, as outlined in the regulations implementing NEPA (40 CFR 1500.4 and 1500.5).

No standard format for scoping exists. Agencies have wide discretion in conducting scoping, as long as they get the results needed to continue the NEPA process. The USACE chose to hold meetings with other agencies and officials, and with the public. In addition, written comments were solicited through the Federal Register notices, announcements in local media, and the USACE web pages.

1.5 HOW THIS SCOPING DOCUMENT WILL BE USED

For a complex project such as the Fargo-Moorhead Metro study, it is important to define at the outset what specific environmental studies need to be reviewed or conducted before a decision is made. This Scoping Document, based on oral and written input from Federal, State, and local agencies, and other interested persons, describes the scope of actions, alternatives, and impacts to be studied in the Fargo-Moorhead Metro EIS and identifies the significant environmental issues that will be studied in detail, as well as those that are not significant or that have been covered elsewhere.

1.6 INPUT ANALYZED FOR THIS SCOPING DOCUMENT

Input analyzed for this Supplemental Scoping Document came from four sources:

- 1. Meetings with Federal, State, local agencies, and other entities.
- 2. A series of four public meetings, two held in November 2008 and two held in May 2009.
- 3. A scoping meeting held in May 2009.
- 4. Written comments submitted by agencies, organizations, and the interested public.

1.7 PROJECT STATUS UPDATE

1.7.1 Purpose and Need

The Purpose and Need Statement reads as follows: "The purpose of the proposed action is to reduce flood risk, flood damages and flood protection costs related to the flooding in the Fargo-Moorhead Metropolitan area."

1.7.2 Objectives

- 1. Reduce flood risk and flood damages in the Fargo-Moorhead metropolitan area.
- 2. Restore or improve degraded riverine and riparian habitat in and along the Red River of the North, Wild Rice River (North Dakota), Sheyenne River (North Dakota), and Buffalo River (Minnesota).
- 3. Provide additional wetland habitat in conjunction with other project features.
- 4. Provide recreational opportunities in conjunction with other project features.

1.7.3 Alternative Update

The proposed alternatives to address the flooding in the Fargo-Moorhead Metro area are as follows: The USACE will identify and evaluate the proposed actions and alternatives in the EIS, which will be

prepared according to federal NEPA regulations. The USACE will evaluate in detail only those alternatives that meet the purpose and need, as discussed earlier. The alternatives to be evaluated by this EIS are described below.

Alternatives

No Action: Continue emergency measures

Nonstructural measures

Buy and relocate flood-prone structures

Flood-proofing

Elevate structures

Flood warning systems

Flood insurance

Wetlands

Grasslands

Pay landowners for water retention

Flood barriers

Levees

Floodwalls

Invisible floodwalls

Gate closures

Pump Stations

Increase conveyance

Diversion channels around the study area

In Minnesota

In North Dakota

Increase conveyance in Oakport Coulee

Cutoff channels (to short-cut existing meanders)

Flattening the slopes on river bank

Replacing Bridges

Underground tunnels

Interstate 29 viaduct

Dredge river deeper and wider

Flood storage

Large dams upstream

Distributed storage

Controlled field runoff

Storage ponds, also used for water conservation

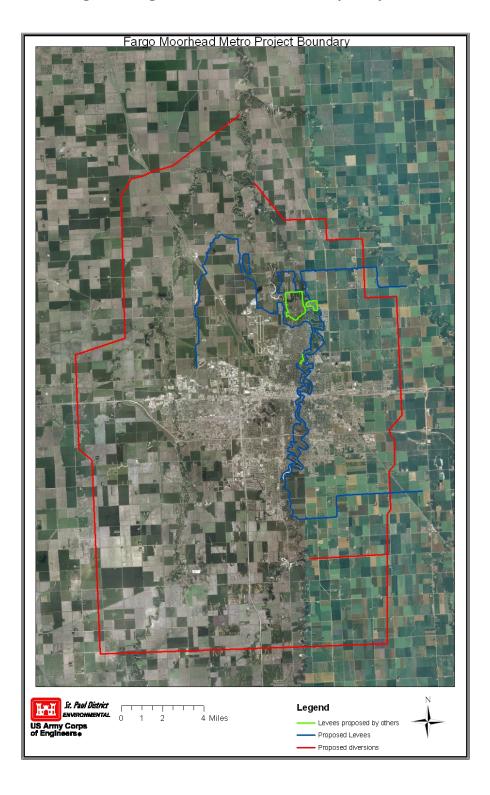


Figure 1 Fargo-Moorhead Metro Feasibility Study Area

2.0 SCOPING AND PUBLIC MEETING INFORMATION

2.1 PURPOSE OF MEETINGS

As part of the scoping process, the USACE, conducted 4 public meetings: two in Fargo N.D. and two in Moorhead, MN. In addition, an agency scoping meeting was held in Fargo, North Dakota. These meetings were held in November 2008 and May 2009 by the USACE to facilitate public involvement for the project and to supplement the NEPA scoping process conducted for the Fargo-Moorhead Metro project.

The introductory meetings held in Moorhead, MN on November 17, 2008 and Fargo, ND on November 18, 2008 were held to introduce the public to the Fargo-Moorhead metro feasibility study, and to inform the public about the activities that would be undertaken in the following months to formulate a plan of action for the Fargo-Moorhead Metro region.

The purpose of the May meetings was to update the public on the current status of the study, to seek any comments regarding the alternatives that the USACE would be carrying into the next phases of the study, and to identify any issues associated with those alternatives. The public was also asked if there were any additional alternatives, concerns, or issues that should be examined. These meetings served to fulfill part of the USACE scoping requirements under NEPA. In addition to accepting oral and written comments at the meetings, the USACE also accepted comments by mail and electronic mail (e-mail).

The goals of the public involvement process are to inform and educate the public and to solicit feedback throughout the planning and design process. The methods used to achieve the goals of the public involvement plan include informing and educating the public about the project in order to identify their concerns. This public involvement process also functions for NEPA scoping as required by the Council on Environmental Quality (CEQ). Scoping requirements are quite specific as described in 40 CFR, Section 1501.7. Of particular importance are the requirements to invite participation by affected Tribal, Federal, State, and local agencies, and other interested individuals or groups; to determine the scope and the significant issues to be analyzed in depth in the Environmental Impact Statement (EIS); and to determine alternatives to be addressed in the EIS.

The meeting notes in Appendix A provide a summary of the oral and written comments received during the comment period for the public scoping meetings. These meeting notes identify the general themes and trends of verbal and written comments received at the meetings. Appendix B contains the written comments that were received at the meetings or during the comment period. Appendix C contains the verbal questions and answers from the public meetings and the scoping meeting.

2.2 MEETING INFORMATION

The meeting dates, times, the approximate number of attendees and meeting locations are shown in Table 1. At the meetings, the USACE presented an overview of the project and project status, identified how comments should be submitted, and then opened the meeting for questions and answers followed by formal comments and statements. The USACE also accepted mailed (or e-mailed) written comments.

TABLE 1
PUBLIC SCOPING MEETINGS SCHEDULE

Location	Date	Time	Attendees	Meeting Location
Moorhead, MN	November 17, 2008	7:00 p.m.	50	City Council Chambers
Fargo, ND	November 18, 2008	7:00 p.m.	40	Prairie Rose Inn
Fargo, ND	May 19, 2009	5:30 p.m.	115	The Centennial Hall Fargo N.D.
Fargo, ND	May 20, 2009	10:00 a.m.	44	The Centennial Hall Fargo N.D
Moorhead, MN	May 20, 2009	5:30 p.m.	140	Hanson Theatre University of Minnesota Moorhead Campus, MN

3.0 UPDATED SCOPING SUMMARY

3.1 GEOGRAPHIC SCOPE OF ANALYSIS

The geographic scope of analysis for the environmental impacts of the proposed action and alternatives consists of the Fargo-Moorhead Metropolitan region, located within the area from approximately 12 miles west to 5 miles east of the Red River and from 20 miles north to 20 miles south of Interstate Highway 94. This includes the Red River and the downstream portions of the Buffalo River, Wild Rice River (ND), Sheyenne River, Maple River, Rush River and other contributing streams that enter the Red River in the study area (Figure 1). In North Dakota the study area includes a portion of Cass County and the cities of Fargo, West Fargo, Hickson, Oxbow, Wild Rice, Frontier, Briarwood, Prairie Rose, Horace, Reiles Acres, and Harwood. In Minnesota the study area includes a portion of Clay County and the cities of Moorhead, Dilworth, Oakport, Rustad, Kragnes and Georgetown.

3.2 SCOPE OF ALTERNATIVES

The following measures will be evaluated in the EIS, and their potential effectiveness discussed. Detailed analyses and project design may result in changes in project features.

1. Future Without the Proposed Project: The measures identified with this alternative are the base condition upon which other alternatives are to be compared for impact assessment under NEPA. This alternative assumes that the types of emergency measures currently being pursued in the project area will continue to be implemented as necessary due to flooding. These emergency measures include such actions as raising levees to protect the cities of Fargo, ND and Moorhead, MN as well as surrounding cities, constructing temporary levees and floodwalls in various areas, and sandbagging.

2. Levee/Floodwalls:

This feasibility study evolved from the City of Fargo's initial request that the Corps study a levee and floodwall plan to protect the city's downtown area. The communities in the study area have historically relied on both temporary and permanent levees to prevent flood damages, and they have been largely successful.

The City of Fargo is developing a levee/floodwall plan for a large area south of Interstate Highway 94 between the Red River, Wild Rice River and Sheyenne River. The plan, called the Fargo Southside Flood Control Project, is being designed to be certified to FEMA as providing 100-year level of protection to the area. For this feasibility study, the proposed Fargo Southside Flood Control Project will be considered as one potential alternative.

The City of Fargo has also investigated levee/floodwall alternatives to provide a continuous line of protection to the entire city at a 100-year level of protection. Their preliminary plans also proposed levees on the Moorhead side to mitigate for potential increased water levels caused by the Fargo levees. These studies have shown that the flood plain is very flat and only slightly above the 100-year flood elevation, so there is very little ground high enough to match a "100-year plus freeboard" elevation. Consequently, levees must be extended several miles away from the river in order to provide sufficient height to account for risk and uncertainty. It would be difficult to provide a certifiable level of protection higher than 100-year level using levees due to the general lack of high ground to tie into.

Levees and other properly designed and constructed flood barriers can prevent damages from most flood events that do not exceed their maximum design event. However, flood events may overtop the barriers or cause unexpected breaches at levels below the design event, leading to catastrophic failure of the system. For that reason, there is always residual flood risk to areas "protected" by flood barriers, and that risk is often misunderstood or ignored by people using those areas. Levees may confine the river and significantly affect river stages upstream, particularly for very large flood events.

This feasibility study will evaluate levee and floodwall features alone and in concert with other potential measures as part of a flood risk management system for the study area.

3. Diversion Channels:

Diversion channels could be used to route flood flows around the metropolitan area, thus reducing stages in the natural channel through town. Diversions have been employed successfully on other projects in the Red River Basin, including projects at Breckenridge, MN, Grand Forks, ND / East Grand Forks, MN and, most notably, Winnipeg, Manitoba. A diversion channel is being proposed as part of the recently approved Roseau, MN project.

During Phase 1 of this study, a preliminary design was developed for a diversion channel on the Minnesota side of the Red River. Other potential alignments will be investigated during the study (Figure 1), including alignments in both Minnesota and North Dakota, and incorporating the existing Sheyenne Diversion from Horace to West Fargo.

Diversions generally provide better risk reduction than levee/floodwall alternatives, because they cannot fail suddenly and catastrophically like a flood barrier can. If a diversion fails to perform, flood stages are no higher than they would have been without the project in place. However, diversions do not eliminate flood risk, and they are not fool-proof measures. Significant residual risk often remains from flood events larger than the design event, and there is potential for blockage of the channel due to ice and debris.

Diversions must be carefully designed to avoid increasing stages upstream or downstream. They must also be designed to avoid or minimize environmental impacts. It would be possible to build aquatic habitat into a diversion alternative, thereby increasing wetland functions in the study area.

4. Nonstructural Measures:

a. Relocation of Structures:

This measure allows for moving structures as part of the project and buying the land upon which the structures are located. It makes most sense when structures can be relocated from a high flood hazard area to an area that is completely out of the flood plain. As discussed above, this is not possible within Fargo and may not be possible within Moorhead. Therefore, any structure relocation would consist of moving the structure from an area of high flood hazard to an area of lower flood hazard and then using the nonstructural measure of elevation to achieve the desired level of flood risk reduction within the metro area. Development of relocation sites where structures could be moved to achieve the planning objectives and retain such aspects as community tax base, neighborhood cohesion, etc would

be investigated as being part of any relocation project. This measure is applicable anywhere in the metro area.

b. Buyout and Demolition of Structures:

This measure requires buying the structure and the land as part of the project. The structure is either demolished or sold to others and relocated to a location beyond the flood plain, all as part of the project. This measure will be considered, and is applicable anywhere in the metro area. Ecosystem restoration and/or recreational amenities could be pursued on the purchased lands for either this option or the Relocation of Structures option.

c. Elevation of Structures:

This measure requires lifting the structure above a particular flood event. In the metro area, the most acceptable elevation measure might be on extended foundation walls. Since most of the structures to be elevated have basements under them, the concept would be to elevate the basement off the ground. Then, depending on the design flood elevation, the elevated basement could be fully developed if the basement floor was above the Flood Insurance Rate Map (FIRM) base flood elevation (BFE) or the design flood elevation, whichever is higher. Basements could be kept undeveloped and wet flood-proofed to equalize hydrostatic force, or could be developed with more comprehensive wet flood-proofing concepts. Owners with fully developed pre-elevated basements would be compensated if the post-elevated basement cannot be developed. This measure is applicable anywhere in the metro area unless the required elevation is greater than 15 feet above the adjacent grade. Velocity and hydrodynamic force would also have to be considered. This measure is generally applicable throughout the metro area depending on flood depth and floodway location.

d. Removal of Basement:

This measure requires filling the existing basement without elevating the remainder of the structure. This would occur if the structure's first floor was above the BFE or above the design elevation, whichever is higher. Adding on to the side of the structure as part of the project would be possible with this measure so as to compensate the owner for the lost basement space. If the add-on is not possible due to lot constraints or because the owner opposed it, compensation for the lost basement space would be in order to the owner. This measure would only be applicable where the design flood depth is relatively small [first floor already above the design depth]. Hydrodynamic force would also be a consideration. This measure is applicable throughout the metro area.

e. Dry Flood Proofing

This measure concerns water-proofing the structure. This can be done to residential structures as well as all other types. This measure achieves flood risk reduction but it is not recognized by the National Flood Insurance Program (NFIP) for any flood insurance premium rate reduction if applied to residential property. Based upon tests at the Corps Engineering Research and Development Center (ERDC), a "conventional" built structure can generally only be dry flood proofed up to three feet on the walls. A structural analysis of the wall strength would be required if it was desired to achieve higher protection. A sump pump is required and perhaps a French drain system is installed as part of the project. Closure panels are used at openings. This concept does not work with basements. It will not work with crawl spaces in the metro area due to the long duration of flood. This measure will work in the metro area if design flood depths are generally less than three feet and on an

appropriate structure as discussed. Hydrodynamic force would also be a consideration. This measure has potential applicability throughout the metro area.

f. Wet Flood Proofing

This measure is applicable as either a stand alone measure or as a measure combined with other measures such as elevation as discussed above. As a stand alone measure, all construction materials and finishing materials need to be water resistant. All utilities must be elevated above the design flood elevation. Because of these requirements, wet flood proofing of finished residential structures is generally not recommended. Wet flood proofing is quite applicable to commercial and industrial structures when combined with a flood warning, flood preparedness, flood response plan. This measure is generally not applicable to large flood depths and high velocity flows.

g. Berms, Levees, and Floodwalls

This measure is applicable to locations within the metro area. As nonstructural measures, berms, levees and walls are generally no higher than 6 feet above grade and are not certifiable for the NFIP meaning that flood insurance and flood plain management requirements of the NFIP are still applicable in the protected area. These nonstructural measures are intended to reduce the frequency of flooding, but not eliminate flood plain management and flood insurance. These measures can be used for all types of structures in the metro area. They can be around a single structure or a small group of structures. With application of these measures to be nonstructural, they cannot raise the water surface elevation of the 100 year flood by any more than 0.00 feet. These measures must be placed with velocity in mind.

h. Flood Warning, Preparedness, Evacuation Plans and Pertinent Equipment Installation

These measures are applicable to the metro area. All of the above nonstructural measures with the exception of buyout and of relocation to a completely flood free site require the development and implementation of flood warning/preparedness planning. The development of such plans and the installation of pertinent equipment such as data gathering devices [rain gages, stream gages], data processing equipment [computer hardware and software], and dial out devices [cellular, land line] can be part of the project.

i. Land Acquisition

Land acquisition can be in either the form of fee title or permanent easement with preference to fee title. Land use after acquisition is open space use via deed restriction that prohibits any type of development that can sustain flood damages or restrict flood flows. Land acquired as part of a nonstructural project can be converted to a new use such as ecosystem restoration and/or recreation that is open space based such as trails, canoe access, etc. Conversion of previously developed land to open space means that infrastructure no longer needed, such as utilities, streets, sidewalks, etc., can be removed as part of the project. The conversion to new use [ecosystem restoration and/or recreation] can also be part of the project. By incorporating "new uses of the permanently evacuated flood plains" into the nonstructural flood risk reduction project, the economic feasibility of the buyout or relocation is enhanced. This is due to partial transfer from flood risk reduction costs to ecosystem restoration, and also by adding benefits [and costs] of recreation. This will be determined by use of the "Separable Costs/Remaining Benefits" guidance. Other Federal agencies such as the NRCS have

permanent easement programs to restore wetlands in "evacuated" flood plains that could be used in a collaborative mode with a Corps nonstructural program.

j. Flood Plain Management Plans

A flood plain management plan [FPMP] is required of the Corps non-Federal project sponsor. The intent of a FPMP is to "protect" the Corps partnered project from diminishing the frequency of flood risk reduction provided by the project. This is a non-Federal sponsor-required activity but, if done during the feasibility phase of study, can be cost shared on the same basis as the feasibility study. This makes sense for the local sponsor from the cost share and also from the holistic flood risk reduction perspective. This latter perspective makes sense for the Corps as well. By integrating the FPMP with the feasibility study, both the FPMP and the ultimate project are bettered. This should be done within this feasibility study.

k. Vertical Construction for Residential Occupancy

This concept refers to condominium living within flood plains, where the at-grade floor is used for open-space uses and the upper stories (which are all above even the most infrequent flood) are used for residence. This vertical construction is proposed for consideration within the metro area, especially in Fargo, because no area within a close proximity to Fargo is high enough above the Red River flood plain, or that of its tributaries, for flood-free residential construction. This may be the same for Moorhead. This concept to change residential construction from single family homes to vertical construction will probably face tough political/social criticism. However, it merits consideration if the metro area is to achieve a No Flood Risk status in the long term.

5. Flood Storage

Flood storage involves both preserving natural flood plain areas and also building dams and other water retention facilities to hold water during flood events. Natural storage in the floodplain occurs as the water rises and fills up low-lying areas adjacent to the rivers. Constructed flood storage projects (impoundments) can be located on the main channel of a river or "off-channel" on a ditch or other man-made connection to a river. Impoundments may be designed to remain dry until a flood event or to retain a pool during non-flood times for conservation or water supply purposes. The effectiveness of flood storage depends on many factors, including distance from the benefited area, volume of water retained, timing of the storage, size of the drainage area controlled, and the amount of runoff contributed from the controlled area during each particular flood event.

There are three existing Corps-owned flood storage projects in the Red River Basin that benefit the study area: Lake Traverse, Orwell Lake, and Lake Ashtabula. Opportunities exist to build additional flood storage, but previous studies have found insufficient Federal interest to support Federal involvement in such projects. The studies have also shown that flood storage alone cannot provide an acceptable level of risk reduction for the Fargo-Moorhead metropolitan area.

The St. Paul District's Fargo-Moorhead and Upstream Area Feasibility Study is currently assessing the viability of multi-purpose projects to provide both flood storage and aquatic ecosystem restoration. Phase 1 of that study determined in 2005 that it may be possible to build 400,000 acrefeet of flood storage in the watershed using projects of 2,000 to 20,000 acre-feet each. An impoundment downstream of White Rock Dam near the ND/SD border that could provide up to 60,000 acre-feet of storage was also considered. (Note: this is the most storage the study team thought possible, due to limits of topography and landowner willingness.) Such a system of

impoundments could reduce the flood stage in Fargo-Moorhead by up to 1.6 feet. The economic benefits of the system have not been fully assessed, but preliminary analyses showed that the National economic development benefits in the Fargo-Moorhead metropolitan area would equal less than one third of the cost, so it appears unlikely that there is sufficient Federal interest based solely on flood damage reduction. It should be noted, however, that lack of Federal economic justification does not imply that flood storage should not be built or is not justified from a Regional or local perspective. On the contrary, it is probable that local jurisdictions will find compelling reasons to construct flood storage projects.

Despite the lack of Federal financial involvement, the Cass County Joint Water Resource District recently built a dam on the Maple River upstream and approximately 35 miles southwest of Fargo, ND. The Bois de Sioux Watershed District in the headwaters of the Red River Basin and the Buffalo-Red River Watershed District are also designing and constructing flood storage projects. These smaller projects provide incremental benefits, but they are not sufficient to prevent major flood damages in the Fargo-Moorhead Metro area.

It is likely that additional flood storage will be built upstream of the study area, but that storage alone is not likely to adequately reduce flood risk to the study area over the next 50 years.

6. Tunneling

A series of tunnels underneath the city was proposed. Potential advantages cited for the concept include: this would require very little real estate acquisition, very little bridge or road building or modification, and the soil in the project area is very soft and would be easy to bore.

7. Bridge Replacement or Modification

Bridges can restrict the flow during flood events. The study will assess the effects of existing bridges and consider modifying them or re-constructing bridges to allow more flow through and prevent the backing up of water.

8. Interstate 29 viaduct

Reconstructing the Interstate 29 corridor to serve as an open viaduct during floods was proposed. The reconstructed corridor would function as an interstate highway during non-flood times.

9. Dredging and Widening the River

Digging the Red River channel deeper and wider will allow for more flow to pass through the Fargo-Moorhead Metro area was proposed. This alternative could also be looked at underneath existing bridges to prevent the damming effect the bridges can create.

10. Wetland and Grassland Restoration

Restoration of grassland and wetlands to reduce peak runoff and serve as water storage during flooding events was proposed.

11. Cut-off channels

Building cut-off channels across meanders in the cities was proposed. This would provide the water a straighter path through the city and potentially reduce peak stages.

12. Sustainability Alternative

This alternative would include a combination of non-structural (Alternative 4), wetland restoration (Alternative 10) upper basin storage (Alternative 5) and cropping-landuse changes.

13. Combinations of the Above Alternatives

The alternatives listed above will be assessed in combination with other alternatives.

3.3 SCOPE OF ISSUES TO BE ADDRESSED IN THE EIS

The USACE has identified issues that would need to be addressed in the EIS through input from public scoping meetings in 2009 and internal and interagency meetings, discussions, and correspondence. Many issues, such as cultural resources and relations with other states and nations, must be addressed due to some form of legal requirement (law, Executive Order, regulation, treaty, or other agreement) and will be covered in the EIS to the extent necessary to ensure that these legal requirements are fully met. Examples include procedural coordination concerning any identified threatened or endangered species and cultural resources.

Based on the scoping process and the analysis of written and oral comments received as part of the scoping meetings, the USACE has determined which issues will be evaluated and which will be summarized in the EIS.

3.3.1 Significant Issues to be Evaluated in the EIS

The following issues were identified by the USACE through input from public scoping meetings and agencies as significant, requiring evaluation in the EIS. The importance of these issues may change as the EIS process proceeds.

3.3.1.1 Downstream Water Quality

This issue includes questions about sulfates, total dissolved solids, mercury, and other water quality parameters in the Sheyenne, Wild Rice, Buffalo, Rush, and Red Rivers.

3.3.1.2 Downstream and Upstream Water Quantity

This issue includes downstream and Upstream flooding both with and without storm events, questions regarding specific water levels at specific locations on the Sheyenne, Wild Rice, and Red Rivers, and discussions on water storage impacts.

3.3.1.3 Buffalo River Aquifer

This issue concerns the East side diversion alternative. There is concern that the Buffalo River Aquifer may be negatively impacted.

3.3.1.4 Social Issues

This issue includes impacts to neighborhoods, homeowners, farmers, and other residents within the study area.

3.3.1.5 Economic Issues

This issue includes questions about infrastructure impacts (such as sewers, roads, and levees), as well as specific issues around tax base, economic viability of businesses (including farms), and the effects on agriculture and other businesses. It also includes issues about cost-benefit and other standard economic analyses.

3.3.1.6 Flood Fighting

This issue includes how the current and historical flood fights affect the planning for a permanent flood control project.

3.3.1.7 Environmental

This issue includes potential effects on any threatened or endangered species that may occur in the geographic scope of analysis. This issue will be analyzed due to legal requirements related to Federal threatened and endangered species.

3.3.1.8 Wetlands

This issue includes the potential for reclaiming wetlands or, at a minimum, maintaining the existing wetlands.

3.3.1.9 Land use and Floodplain growth

This includes floodplain development, protecting land for development purposes, and existing land use versus future land uses.

3.3.1.10 Downstream Erosion and Sedimentation

This issue includes impacts to riverbanks and shorelines on the Red Rivers and its tributaries within the study area. It involves questions about bank stabilization (mitigation), severity of erosive effects, overbank flooding, elevation of the floodplain, effects on river stage, short- and long-term water level changes and combined discharges.

3.3.1.11 Cultural Resources

This issue includes potential effects on archaeological and historical resources (including traditional cultural properties) that may be eligible for the National Register of Historic Places. This issue will be analyzed due to legal requirements.

3.3.1.12 Fish Passage

This issue includes how fish passages will be impacted by selected alternatives. Will existing passage ways be influenced?

3.3.1.13 Flooding

This issue includes the environmental benefit of some lighter level of flooding; some fish species depend on it.

3.3.1.14 Downstream Aquatic Resources

This issue includes topics related to fishery health, effects on riverbank (riparian) vegetation, Red and Sheyenne River fishery, mussels and plankton, and other nutrients.

3.3.1.15 Fargo Southside Project

This includes the Fargo Southside project being developed by the city of Fargo; many folks think this project and the Fargo-Moorhead Southside project have similar purposes.

3.3.1.16 Executive Order 11988

This issue includes undeveloped lands that may be inside the protected area as a result of the project constructed.

3.3.1.17 Natural Resources Habitat

This issue includes natural resource habitat along the entire impacted area.

3.3.1.18 Slope Stability

This issue includes slope stability along all impacted river corridors in the study area.

3.3.2 Issues to be Summarized or Not Addressed in this EIS

The following issues were identified as not significant, not significantly impacted by the project or beyond the scope of analysis for this EIS. They will be summarized in the EIS or dismissed as not significant.

3.3.2.1 Noise

Noise was not identified as a significant issue.

3.3.2.2 Air

Air was not identified as a significant issue.

3.3.2.3 Mineral Resources

Mineral resources were not identified as a significant issue.

3.3.2.4 Energy Production

Energy production was not identified as a significant issue.

3.4 ADDITIONAL COMMENTS

Many oral and written comments were received at the public meetings, along with numerous technical questions that were responded to at the meetings by USACE and the sponsors from Fargo and Moorhead.

APPENDIX A

COMMENT SUMMARY SCOPING MEETINGS

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SCOPING MEETING COMMENT SUMMARY Fargo Moorhead Metro Study

This appendix summarizes the general trends and themes of verbal comments presented at the meetings and contained in written comments during the public comment period. Comments have been divided into categories or issues. Written comments are included in Appendix B. Where a comment was summarized from a written comment, the written comment identification code is noted. The written comment identification code is composed of:

- Submittal date code (e.g., April 20, 2009=090420).
- Name of commenter (if known).

This code allows the reader to identify and review written comments in Appendix B related to the summaries presented here. Comments without the code were summarized from verbal comments made at the meetings. Written comments read at the meetings are summarized under the written comments section for each issue and can be found in Appendix C. Some comments can be found under more than one issue.

1.0 TIMING/SCHEDULE

1.1 VERBAL COMMENTS SUMMARIZED FROM SCOPING MEETINGS

What is driving the timeline? How is this coordinated with the Fargo Southside Project?

If the diversion project proceeded in 2012, what would be the completion date?

It appears that the earliest the project would be constructed would be 10 years from now. How can we protect ourselves in the meantime?

2.0 SCOPE OF ALTERNATIVES/GEOGRAPHIC SCOPE OF ANALYSIS

2.1 UPPER BASIN STORAGE

2.1.1 Verbal Comments Summarized From Scoping Meetings

Waffle Storage concept should be reconsidered where farmers are paid for storage when needed.

I don't understand levees. What is wrong with building dams like the Garrison Dam?

Timing is also an issue if water can be retained at its origin. The time between the pre-crest level and the post-crest level was a few hours – if water can be retained even that long, the peak should decrease.

Are we still considering the "waffle plan"?

2.1.2 Written Comments Submitted During the Comment Period

090417_Fitzpatrick – I am thinking of 2 to 3 overflow canals, dug to the overflow level of the river that would carry the extra water to a large pit, where the water would be pumped out and used for productive uses throughout the summer.

090519_Bach - What about off-line storage on North Dakota side south of Wild Rice? Has that been looked at? Probably need 8 to 10 sections of land, dig 20 feet deep.

090520 Mark Nokken – Water retention to keep floods at a manageable level.

090521_Sandt – All fields should have gates on them holding water back during flood events; this would be controlled by a water board.

090606_Tweeten – Build successive weir pools upstream of affected areas. During low-flow periods the basin of the pools could be native grass to support nesting birds and other wildlife, which after time could be valued as a hunting resource.

090525_Keller – I feel permanent flood protection must include multiple solutions; in conjunction with a diversion channel I would like to see a series of large holding ponds up and down the river in both Minnesota and North Dakota.

090606 Breker – I am interested in the economic analysis in all potential upstream water retention.

090606 Ista – We need assistance to build retention on the Wild Rice River to decrease flows.

090622_NWF – The waffle project, combined with wetland restoration is also a viable alternative. The waffle plan is simple, existing roads serve as levees to store water in farmers' fields. One square mile holding water 1 foot deep will store more than 200 million gallons of water.

090624_NDWF – We ask that you please include Red River basin and watershed-wide solutions that incorporate wetlands and grasslands.

The multiple functions wetlands and grasslands can provide in holding snow, runoff water and rain can reduce pressure on levees and dams.

These natural resources can also reduce river and stream flows enough to decrease the impacts of dramatic flooding on communities.

090629_Bezek_MNDNR – The employment of water retention should be included in the mix of alternatives. Opportunities exist to increase and improve ecosystem and wetland restoration, wildlife habitat and provide recreational opportunities through the use of multipurpose water retention areas.

090630_Fetch - I propose two methods that seem to be much less expensive than a diversion and have merit in lowering flooding. One is the "waffle concept" that has been researched in detail by scientists at the University of North Dakota in Grand Forks. Clearly we can use the existing ditches by controlling runoff through the culverts in the spring.

A second method that I propose is a retention strategy that could use low-lying farmland adjacent to major rivers to hold water. If low-lying land adjacent to the Red River was purchased and a series of perpendicular ditching was cut (20 to 30 feet deep and perhaps the same width extending several hundred feet) using large backhoes or D5 Caterpillar equipment, water could be diverted and held, and pumped out later

090709_EPA – A range of alternatives should be developed including waffle approach, enlarging floodways through land use as well as levee and channel diversions, nonstructural approaches that restore natural floodplain connectivity, including enhancement or creation of wetlands and other flood reduction techniques.

090811_FPC – We ask the Corps to review management of current water storage in dams when a 100-year+ flood is predicted. If necessary change the law or guidelines to maximize benefits for floods over the 100-year mark.

No Date_Stern – Two-way pipeline to reservoir behind Garrison – flood relief in spring, water supply in summer during dry years.

Anonymous – Build retention areas along the rivers that feed the Red. That's where it starts. Pay the farmers to hold the water. This will cause no permanent damage to land compared to diversions or channel extensions or oversized dikes. Some floodwalls or smaller dikes will be needed in some areas.

2.2 INCREASE CONVEYANCE

2.2.1 Verbal Comments Summarized From Scoping Meetings

Can we just widen the river that's there?

Could the regional solution include the Sheyenne Diversion, or does the existence of the Sheyenne Diversion make us go into Minnesota with a new diversion?

Where would a Minnesota diversion go?

The Sheyenne Diversion project created ponding where there was no flood problem before. Beware of creating unanticipated problems.

Could we increase conveyance through town?

Has any thought been given to buying out a larger portion of the river to create a larger river to convey more water?

Have you thought about using the I-29 corridor as a diversion?

Are you talking about diverting the entire river or would the water be diverted at a certain elevation?

How do bridges constrict the flow?

Has a study been completed that will identify the reason for the increase in flooding frequency? Could the river be dredged to create a deeper river that would increase conveyance?

If bridges are a constriction along the river, why are we not looking at reconfiguring the pilings like on the LA River? Can we have a standardized measuring system for stages given that there are variations in stage measurements? I am in favor of dredging and straightening of the Red River.

How do you accommodate traffic over a 2,000-foot-wide ditch? Why wouldn't the diversion channel go through Fargo on the west?

The diversions go through dry land. Why can't they be located in areas where the land is wet?

2.2.2 Written Comments Submitted During the Comment Period

090519_Kathy Laney – I vote for a diversion: long-term solution, allows Fargo-Moorhead to still be a river city, provides protection to surrounding small communities. Start now! If we could sell our home we would move out of community.

090519_Charles D. Dunnell – Number one choice is: diversion channel, second choices modify or add onto the West Fargo diversion.

090520_Olson - I resent the diversion planned on my property: (Stanley Township, South of County 14, Sections 25 and 26). This is devastating to the beautiful farmstead (which has been in our family since the 1880s) the tranquility and beauty of the river, the adjacent wooded area and the farm acreage. It is difficult for me to believe that this type of devastation could be handed to me.

It is not true that I am not interested in flood control. If need be, I will approve the planned dike (wet side) on the west rim of the property.

I chose to not develop my property. Others did, knowing they were in harm's way.

090520_A Saharieff – Please consider: dredging the river under the three bridges; Main Avenue, NP Avenue, and the Railroad trestle. Also design and build torpedo-shaped flow accelerators in front and behind the bridge support abutments. Flow must be enhanced for levees to work. Please consider dredging and cross cutting the river channel

090520_Koppang – I drew out the diversion option on the Minnesota side during a lull in this year's flood battle. My drawing closely mimics the drawing the Corps provided at the public meeting for the east side diversion.

090520_Neuhauser - One of three options would be to divert the water around town, but this would be expensive due to land acquisitions, bridge and road construction, and very time consuming. What I am proposing is a tunnel system underneath the city. Very small land acquisition, very little bridge and road construction, and the soils are easy to bore through.

090520_Deanne Sperling – Diversion seems the most practical solution.

090520_Gary Shramstad – I suggest a diversion of the Sheyenne from McVille to the Red River north of Grand Forks. This would alleviate flooding on the Sheyenne and Red, since the Sheyenne headwaters are north of Bismarck. It would also solve the problem of Devils Lake overflowing.

090520_Reinke - Having attended the flood presentation at Moorhead State I believe the only real resolve to the long-term flood problem must involve some type of diversion.

Water retention and other forms of water control may offer some form of relief, but they are only bandaids to the overall problem.

It was an excellent presentation.

090519_Cousins - I feel any plan must include a diversion channel. The cities that have one seem to do well – Breckenridge, West Fargo and Winnipeg. I would like to see a combination plan, levees and a diversion channel.

A 500-foot-wide, 20 feet deep below field elevation, and a 2,000-foot top width diversion channel seems excessive.

What is the cfs for a 100-year flood and what cfs would the diversion channel handle?

What is the proposed water depth and velocity of the diversion channel?

Would a diversion channel be detrimental to anyone downstream?

090521_Linnertz – Run a diversion from the Red River around the west side of West Fargo, to include the Red, Wild Rice, and Sheyenne Rivers. Continue the same to the confluence of the Red and Sheyenne.

090521_Linnertz – Create the Red River Diversion to the east as referenced in the meeting, and create an extension of the West Fargo Diversion utilizing Drain 41.

090602_Majkrzak – I propose you consider the I-29 right-of-way as an open viaduct during major floods and as a roadway during normal flows. I also suggest a split in I-29 to create a North Dakota side and a Minnesota side; these would serve as mini diversion channels holding and forcing flows north protecting the cities from overland flooding from small creeks and coulees from the east and west directions.

090606_Lahren – Why do you need a 500-foot-wide bottom for a diversion?

090606_Sell – The diversion is the only answer! But it doesn't need to be 500 feet wide; it should be 50 feet wide. We need a 100-year solution!! The alternative of the North Dakota diversion from the Wild Rice River to north of Harwood is very good.

090608_Bergan – We need 100-year solution; the only method of flood protection that is sure to work is a diversion around Fargo-Moorhead. A 500-foot-wide bottom seems too wide; a 50-foot width is what we need. The North Dakota side may be better for political reasons.

090619_Bergan – We now know that the Main Avenue bridge acts as a dam at about 40 feet, attached pictures. At about 41 feet the water will back up and flow around both ends of the bridge and into the cities. The diversion is the only answer.

090621_Siemens – I don't understand why folks are so reluctant to put permanent flood protection in place. All the water that went through Fargo went through Winnipeg this spring. The flood waters were a non-event in Winnipeg thanks to the diversion.

Putting up floodwalls, levees, etc., is a collection of band-aids that you can never be sure will really do the job; they also require a lot of maintenance.

Defacing riverfront property with walls, levees, etc., is a horrible thing. What will happen to property values in the nicest neighborhoods in Fargo?

Originally they said it could not be done in Winnipeg either; but people with vision, foresight and determination made it happen.

It is not a question of can we do it or should we do it, the only questions should be HOW QUICKLY CAN WE GET A DIVERSION BUILT?

090622_Bergan – I have attached proposed design criteria for protection of Fargo Moorhead metro to 50 feet

- 1. Where would it start and end? Wild Rice River west of I-29 and end north of Argusville.
- 2. What areas would be protected? Both side of the river for the length of the diversion and to some extent about 10 miles south of the inlet.
- 3. What cities/areas would be protected? Fargo, Moorhead, West Fargo, Oakport, Briarwood, Round Hill, Hickson, Horace, Oxbow, Harwood, and more.
- 4. How much would be diverted? The total flow of the Wild Rice and the overland flooding from there to West Fargo which is about one-half the flow of the Red River. Additional amounts from the Red River could be added if needed at a later time to maintain the best balance.
- 5. How much will the Federal Government pay? 65 percent or \$650 million of a \$1 billion project.
- 6. Where will the other money come from? States of North Dakota and Minnesota and the cities of Fargo and Moorhead.
- 7. Does it work? It has worked as advertised in West Fargo, Winnipeg and other areas.
- 8. How soon could it be started? If a diversion could be selected as the method it should shorten the process.
- 9. Will it take a lot of farmland out of production? No, estimate it will only take 600 acres out and change 4,000 from corn to alfalfa.
- 10. Why are we having these large floods? Wet cycle- see Devils Lake 8 of 10 record floods in the last 40 years.
- 11. What happens if the flood exceeds the capacity of the diversion? It overflows to the west and north over farmland.
- 12. Does it dump water on Harwood? No will enter the Red way north of Harwood and it is the same amount of water.
- 13. What is the size? It is estimated to be 20 to 30 feet deep and average 75 feet wide at the bottom and maybe 500 to 700 feet at the top.
- 14. Can eminent domain be used to acquire the land? Yes same as would be needed for a levee system.
- 15. What is the probability of a crest over the 2009 level? The National Weather Service on 4-4-09 indicated a 10 percent chance of 44.6 feet for the second crest.
- 16. Should we build more dams? Valley City had a major flood this year and about 100 percent of the water from its drainage area is stored in Devils Lake or flows into the Baldhill Dam. Spillways washing out such as Clausen Springs.

Facts for a split flow diversion

- 1. The 1826 flood was 40 percent larger than the 1997 flood in Winnipeg. April 4, 2009, the National Weather Service said there was a 10 percent chance of a 44.6-foot crest in Fargo. Fargo-Moorhead, not just property along the river could be flooded.
- 2. A plan is needed to allow us a chance to survive a flood of this magnitude.
- 3. A 700-year flood can occur at any time it could be next year.
- 4. We are in a wet cycle.
- 5. The Red River soil is unstable.
- 6. Fargo-Moorhead is the last major community in the valley with no significant permanent protection.

- 7. Sending one-half the water into a diversion would make fighting a large flood manageable.
- 8. Must have a zero possibility of over a 40-foot flood so that the Main Avenue bridge does not act as a dam.
- 9. The design could route any water over say 22 feet until you reach say 30 feet down the diversion then about one-half the entire flow.
- 10. The flow in a diversion is expected to be below ground level. Spoil banks would be more like a dike on the east side of the diversion.
- 11. Topping the diversion would flow west and north into fields.
- 12. Topping the proposed Corps levees would inundate the cities.
- 13. Physics the amount of water is not increased at the outlet by the diversion.
- 14. Levees have many failure modes such as design flaws, shifting soil, water over or under, through, etc.
- 15. Squeezing the water (i.e., in levees) increases the height of the flood.
- 16. The slopes can be used to grow alfalfa.
- 17. Buyouts along the river are not required.
- 18. Residents of Fargo-Moorhead can feel secure during a flood.
- 19. Stress would be reduced and lives saved (relocating the elderly and sick).
- 20. Will increase values along the river and in the cities.
- 21. The 2009 flood had a huge negative impact on the Fargo-Moorhead economy West Acres Mall closed for days.

090622_Feist - Please consider the diversion plan as the permanent solution for flood control, for the Fargo-Moorhead metropolitan area. One only has to look to Winnipeg to see how successful that diversion has been at protecting their city from flood waters.

090623_Satrang - I am writing to let you know that I support a diversion for flood protection of Fargo-Moorhead and the surrounding areas. The Corps of Engineers has requested public comments. The diversion is the only sure protection. We need something that will protect us against a 500-year flood level! The only method of flood protection that is sure to work is a diversion around Fargo/Moorhead. Please urge the Corps to focus all efforts on a diversion.

The 500-foot width projected for the bottom of the diversion by the Corps is too wide. A much narrower bottom width would work well based upon comparisons to the original Winnipeg diversion. This should reduce the cost significantly and would give it a favorable cost benefit ratio.

A diversion should start on the North Dakota side at the Wild Rice River as suggested by the Corps, and should be started on the west side of I-29.

Dikes and floodwalls are a very poor solution to a very complex problem.

090623_Solberg - I am writing in support of a diversion channel as the best option to protect Fargo-Moorhead from the Red River floods.

There are other alternatives out there, but I feel that the diversion channel should be the favored solution.

090624_Furness – I would like to add my voice to the growing number of people who are advocating for a significant diversion solution to the increasingly frequent flooding of the Red River.

I have been encouraging officials to search for solutions involving a combination of water storage, dike protection and diversion. Diversion, if feasible, seems like the best long term solution.

090629_Boe – We need a 100-year solution! The only method of flood protection that is sure to work is a diversion. But it doesn't need to be 500 feet wide; it should be 50 feet wide. The alternative of the North Dakota diversion to start at the Wild Rice River and end north of Harwood is very good.

090629_Bolin - We need a 100-year solution! The only method of flood protection that is sure to work is a diversion. But it doesn't need to be 500 feet wide; it should be 50 feet wide. The alternative of the North Dakota diversion to start at the Wild Rice River and end north of Harwood is very good.

090629_Cosette - We need a 100-year solution! The only method of flood protection that is sure to work is a diversion. But it doesn't need to be 500 feet wide; it should be 50 feet wide. The alternative of the North Dakota diversion to start at the Wild Rice River and end north of Harwood is very good.

090629_Finch – Why not dredge the river wider and deeper? Cement the bottom and sides to hold the banks.

090629_Halvorson - We need a 100-year solution! The only method of flood protection that is sure to work is a diversion. But it doesn't need to be 500 feet wide; it should be 50 feet wide. The alternative of the North Dakota diversion to start at the Wild Rice River and end north of Harwood is very good.

090629_Schock - We need a 100-year solution! The only method of flood protection that is sure to work is a diversion. But it doesn't need to be 500 feet wide; it should be 50 feet wide. The alternative of the North Dakota diversion to start at the Wild Rice River and end north of Harwood is very good.

090629_Tillman - We need a 100-year solution! The only method of flood protection that is sure to work is a diversion. But it doesn't need to be 500 feet wide, it should be 50 feet wide. The alternative of the North Dakota diversion to start at the Wild Rice River and end north of Harwood is very good.

090630_Altendorf - We need a 100-year solution! The only method of flood protection that is sure to work is a diversion. But it doesn't need to be 500 feet wide; it should be 50 feet wide. The alternative of the North Dakota diversion to start at the Wild Rice River and end north of Harwood is very good.

090630_Bender - We need a 100-year solution! The only method of flood protection that is sure to work is a diversion. But it doesn't need to be 500 feet wide; it should be 50 feet wide. The alternative of the North Dakota diversion to start at the Wild Rice River and end north of Harwood is very good.

090630_Bredell – I wanted to let you know that I support a diversion for the Fargo-Moorhead area. A dike system is a band-aid that will fail in time.

090630_Cronin - I am in total agreement with the group of people proposing a North Dakota diversion channel west of the city of Fargo. I have several reasons to support their position:

- 1) A large amount of the water entering the Red River channel comes from the west. It is logical to keep it on the west side instead of going the long way around the city.
- 2) Keeping the diversion in North Dakota limits the amount of political infighting that will happen when water crosses any type of border.

- 3) In addition to the Wild Rice River a west side channel could collect water from the Sheyenne, Maple and Rush. It offers a greater choice of design and function.
- 4) Being able to provide solutions to more rivers brings more people on board with the project. I don't think that many people outside of Fargo are excited about paying for Fargo's flood control with a sales tax. I know many people in my area would be in full support of the taxes and project if it offered diversion like protection for us. I also think that people would be more comfortable about helping drain Devils Lake through the Sheyenne if there was diversion protection.

090630_Forknell - As a resident of North Dakota, I am in strong support of the recently presented diversion that would run through North Dakota. The only method of flood protection that is sure to work is a diversion. The alternative of the North Dakota diversion to start at the Wild Rice River and end north of Harwood is very good.

090630_Hannaher - I am writing this note to you today to encourage you to consider a diversion as opposed to a levee system to protect the Fargo-Moorhead area.

The facts are in and my concerns are focused on the long term reliability of a levee system given that we have a soil structure that really has no structure. In my opinion even if we put pilings down to bedrock to support a levee system the risk will always be there for wash outs due to water pressure between the pilings. Those weak points would not manifest until a flood occurs again and would put the city at risk.

090630_Hegg - We need a 100-year solution! The only method of flood protection that is sure to work is a diversion. But it doesn't need to be 500 feet wide; it should be 50 feet wide. The alternative of the North Dakota diversion to start at the Wild Rice River and end north of Harwood is very good.

090630_Hoefs - We need a 100-year solution! The only method of flood protection that is sure to work is a diversion. But it doesn't need to be 500 feet wide; it should be 50 feet wide. The alternative of the North Dakota diversion to start at the Wild Rice River and end north of Harwood is very good.

090630_Mitchell- We need a 100-year solution! The only method of flood protection that is sure to work is a diversion. But it doesn't need to be 500 feet wide; it should be 50 feet wide. The alternative of the North Dakota diversion to start at the Wild Rice River and end north of Harwood is very good.

I have lived along the river for the past 35 years and 27 of those years there were only three floods, now since 97 it seems like every other year there is concern for our towns and property. This diversion is the only thing that makes sense to me; diking only raises the levels beside the worry of a breaching. I feel the Corp of Engineers should take a serious look at this proposal and consider the long range of PERMANENT flood control.

090630_Moen - We need a 100-year solution! The only method of flood protection that is sure to work is a diversion. But it doesn't need to be 500 feet wide; it should be 50 feet wide. The alternative of the North Dakota diversion to start at the Wild Rice River and end north of Harwood is very good.

090630_Passolt - Please put the diversion project (Western Diversion) that ex-Gov.Schaefer is promoting as your #1 Option to protect Fargo-Moorhead and surrounding area.

I've read several articles about some of the alternatives and my current house is located in an area where they were proposing a dike in my backyard even before the flood of 2009. It's a good thing the proposed dike wasn't built because it would've been too low.

I believe the Western Diversion is the answer to these issues; please make it your #1 Option.

090630_Pfeiffer - We need a 100-year solution! The only method of flood protection that is sure to work is a diversion. But it doesn't need to be 500 feet wide; it should be 50 feet wide. The alternative of the North Dakota diversion to start at the Wild Rice River and end north of Harwood is very good.

090630_Werlinger - We need a 100-year solution! The only method of flood protection that is sure to work is a diversion. But it doesn't need to be 500 feet wide; it should be 50 feet wide. The alternative of the North Dakota diversion to start at the Wild Rice River and end north of Harwood is very good.

090701_Gates - I own a home in Fargo, and like many others in the community, I am concerned that a dike/levee solution will not provide the necessary protection that our cities require. I am sure you are aware, the best way to ensure our community is not faced with billions of dollars in flood damages when a 42 to 43 foot flood hits is a diversion through Minnesota or North Dakota.

I do not see how a levee system can offer a 99.9 percent assurance, especially considering the unpredictable nature of the Red River.

How can dikes or levees protect to 45 feet when the automobile and railroad bridges downtown start holding back water at 41 feet?

A diversion can keep the river well below 40 feet in even the worst flood, and the damage would be minimal in the event of a failure.

A diversion system can be designed that not only protects against major floods, but can keep the river below 25 feet through town during "nuisance" floods as well. The area's best parks, golf courses, and trails begin taking on damage at this level. Conversely, a dike/levee project will require many riverside property buyouts, lessen the recreational and visual appeal of the river, and it does not provide a solution for the "nuisance" floods that have become so common during the summer months.

090701_Ortmeier - We need a 100-year solution! The only method of flood protection that is sure to work is a diversion. But it doesn't need to be 500 feet wide; it should be 50 feet wide. The alternative of the North Dakota diversion to start at the Wild Rice River and end north of Harwood is very good.

It seems only logical to use the form of a diversion ditch rather than levees to avoid catastrophic failure due to breach.

Levee system will only funnel a higher volume of water THROUGH the communities where it can do the most damage if a breach occurs.

090702_Dickerson - We need a 100-year solution! The only method of flood protection that is sure to work is a diversion. But it doesn't need to be 500 feet wide; it should be 50 feet wide. The alternative of the North Dakota diversion to start at the Wild Rice River and end north of Harwood is very good.

090712_Dufault - We need a 100-year solution! The only method of flood protection that is sure to work is a diversion. But it doesn't need to be 500 feet wide; it should be 50 feet wide. The alternative of the North Dakota diversion to start at the Wild Rice River and end north of Harwood is very good.

I live in West Fargo and it has already proved invaluable that we have a diversionary channel. It's just really too bad that the rest of the city has not had this done yet.

090714_Engler - We need a 100-year solution! The only method of flood protection that is sure to work is a diversion. But it doesn't need to be 500 feet wide; it should be 50 feet wide. The alternative of the North Dakota diversion to start at the Wild Rice River and end north of Harwood is very good.

090715_Clasen - We need a 100-year solution! The only method of flood protection that is sure to work is a diversion. But it doesn't need to be 500 feet wide; it should be 50 feet wide. The alternative of the North Dakota diversion to start at the Wild Rice River and end north of Harwood is very good.

090715_Heidt - We need a 100-year solution! The only method of flood protection that is sure to work is a diversion. But it doesn't need to be 500 feet wide; it should be 50 feet wide. The alternative of the North Dakota diversion to start at the Wild Rice River and end north of Harwood is very good.

090715_Hoefs - I would like to urge you to strongly consider a diversion to protect Fargo-Moorhead from future flooding. There are many flood control options on the table right now, and I believe a diversion plan may not be getting due consideration. Given the enormous expense of fighting floods and funding flood protection the public deserves a thorough review of this proven method of flood control.

090717_Bergman - We need a 100-year solution! The only method of flood protection that is sure to work is a diversion. But it doesn't need to be 500 feet wide; it should be 50 feet wide. The alternative of the North Dakota diversion to start at the Wild Rice River and end north of Harwood is very good.

090717_Holscher - I am writing to inform you of my support for the split flow diversion that has been recommended by the Flood Protection Coalition for the Fargo-Moorhead Community. For permanent flood protection, the advantages of the diversion far outweigh the advantages of a levee or other type of system.

Major areas that I like about the diversion are:

- 1. If the water level would exceed the diversion, the flooding goes to fields to the north and west and not inundating the cities of Fargo, Moorhead, West Fargo, et al.
- 2. There is the ability to add containment for some of the spring runoff that could be used in dry years which could negate the need for a pipeline to the Garrison Diversion.
- 3. We can do it all right here in North Dakota and eliminate the red tape of having to work with two states which means getting it done in a more timely fashion.

090722_Fujimoto - We need a 100-year solution! The only method of flood protection that is sure to work is a diversion. But it doesn't need to be 500 feet wide; it should be 50 feet wide. The alternative of the North Dakota diversion to start at the Wild Rice River and end north of Harwood is very good.

090722_Jensen - Here are my observations as a non-engineer:

- 1. The Grand Forks temporary dikes were overwhelmed in 1997.
- 2. The Grand Forks permanent dikes held in 2009.
- 3. The flood levels are becoming more unpredictable.
- 4. Fargo and Grand Forks temporary and permanent dikes are expensive.
- 5. Failure of a dike is ruinous to a community and its businesses and their futures.
- 6. A dike has a structural limit.
- 7. Diversions in West Fargo and Winnipeg have a clear history of success.
- 8. Diversions do not need to be rebuilt and do not increase upstream water levels.
- 9. Increasing upstream water levels will adversely affect farmlands.
- 10. Diversions assist the river to flow more freely.
- 11. A temporary dike can be constructed to assist a diversion. A diversion cannot be constructed rapidly to assist a dike system.

Choosing a diversion appears to be the best option. Choosing the cheap or easy option does not stand the test of time well. Please use wisdom in your decision.

090811_FPC – The Flood Protection Coalition proposes a 20,000-cfs diversion increasing in size as it flows north on the North Dakota side, diverting the Wild Rice and adding water from the Red only if the cost is justified.

A control structure on the Red should be avoided if possible because it will potentially raise the river level to the south and provide little or no benefit to that area.

An option to any North Dakota plan could be to divert only the Wild Rice River west of I29 to reduce costs.

Please evaluate whether or not the area of the Sheyenne diversion under the I-94 Bridge can be made deeper and wider to get by without replacing the bridge until the next time the interstate is worked on.

We feel very strongly that any flood protection plan must protect our community from a 500-year event and a diversion on the North Dakota side of the river is the only viable option.

2.3 FLOOD BARRIERS

2.3.1 Verbal Comments Summarized From Scoping Meetings

Why do we need floodwalls in Harwood Groves if you're going to build a diversion?

If a levee is constructed, up to what level will it be constructed? If I want a permit to construct my own levee can I construct it to the level of the 1997 flood?

What is the value in building levies above the 40-foot stage?

2.3.2 Written Comments Submitted During the Comment Period

090519_Mathern - Our home was right next to the dike – we support a permanent dike plan even it affects our view of river and change to our property.

090520_Neuhauser – One of three options would be to build large flood walls through town.

090521_Sandt – Water tubes similar to those used in the flood this year should be on hand to be used for helping with flooding.

090606_Wolf – How are you determining where the levees will be constructed if that is the chosen alternative?

090811_FPC – The Flood Protection Coalition believes the levee system designed for a 100 year flood as proposed in the preliminary Corps plan is not acceptable and is not comparable to a diversion system that will protect us from a 500 year flood.

2.4 POLITICAL

2.4.1 Verbal Comments Summarized From Scoping Meetings

2.4.2 Written Comment Submitted During the Comment Period

090520_Olson - The Fargo Flood Plan is too restricted in scope. It appears as if developing the area is a priority, rather than flood control. My assumption is that politics has entered in. Individuals with prestige are spared intervention of flood control. This was verbalized at one meeting.

090521_Sandt – I suggest developing a Water Commission Board that has the authority to drain lands when it is appropriate to decrease flooding.

2.5 OTHER GEOGRAPHIC SCOPE OF ALTERNATIVES

2.5.1 Verbal Comment Summarized From Scoping Meetings

2.5.2 Written Comments Submitted During the Comment Period

090520_Jill Johnson-Davidson — We would like our property protected. No one interviewed my neighborhood last September (Woodlawn Point, Moorhead). Proud survivors, who live with river. What is least damage: dredge or diversions — both have impact. End building permits on spongy wetland. Permit and enforce coordinated farm runoff. What is best for the river and her health? Don't only listen to or believe city officials especially about buyouts — ask residents directly. Why are there more floods, higher crests — what are the contributing factors that can be mitigated. Moorhead's goal was to protect infrastructure not homes or people. Fargo diked extensively; raised water in our neighborhoods. We were not contacted in September — based on our location, I would think we would be. Diversion number one choice. Explore contributing causes of why floods have increased. We love the river — for us, the river is not the problem — the flood is not the problem.

090519_Cousins - I would like to see a combination plan, levees and a diversion channel.

090520_A Saharieff - Design and build torpedo-shaped flow accelerators in front and behind the bridge support abutments. Flow must be enhanced for levees to work.

090520_Chuck Stenso – Buy out homes on west side of River Drive. Build berm to 46 to 48 feet along west curb. Area could have bike path/picnic area.

090606_Headrick – How will Corps handle existing structures, such as Sheyenne diversion; could they be altered to work better for full region protection, or will they be left as is?

090606_Koski – How can you adjust your project for a river that flows north into a frozen drainage channel?

090622_NWF – Evaluate wetland restoration and other nonstructural approaches as an alternative for flood control and protection.

From our perspective, levee construction and diversions are very expensive, threaten downstream communities with additional flood hazard and offer no environmental benefits.

Wetland restoration can reduce flood peaks, shift timing of events, while providing benefits to include clean water, larger fish and wildlife populations and enhance recreational opportunities.

Evidence suggests that wetland drainage over time had significantly impacted flooding in the Red River basin. The area has experienced 8 of the 10 all-time record flood crests in the past 30 years.

The study must develop a Wetland Restoration Alternative.

The prairie pothole region provides viable wetland restoration opportunities.

090624_NDWF – We ask that you please include Red River basin and watershed-wide solutions that incorporate wetlands and grasslands.

The multiple functions wetlands and grasslands can provide in holding snow, runoff water and rain can reduce pressure on levees and dams.

These natural resources can also reduce river and stream flows enough to decrease the impacts of dramatic flooding on communities.

090709_EPA – A range of alternatives should be developed including waffle approach, enlarging floodways through land use as well as levee and channel diversions, nonstructural approaches that restore natural floodplain connectivity, including enhancement or creation of wetlands and other flood reduction techniques.

Land use planning and floodway zoning in the Fargo Metro area should be disclosed in this study.

No Date_Dave Anderson – I believe we must utilize every measure – barriers, diversion, and storage to ensure the greatest level of protection

3.0 SCOPE OF ISSUES

3.1 INFRASTRUCTURE PROTECTION

3.1.1 Verbal Comment Summarized From Scoping Meetings

What are the realistic options other than a diversion?

Why build homes where the low ground and flooding is?

Could you explain what an invisible wall is? How will a cut-off channel make things better?

I'm trying to build something in my backyard – how high should I build it? Who will provide me with that guidance?

Could you talk more about nonstructural solutions such as buyouts?

Moorhead still has walkout basements, could those be flood proofed as part of the project?

3.1.2 Written Comments Submitted During the Comment Period

090624_Moberg - My question or concern is that the city of West Fargo is considering doing a development of 240 homes out by me, on the outside of the diversion and if the development is not done correctly this development is going to have problems during the next flood and it might also impact my flooding problem. So I am wondering how we go about making sure that the city of West Fargo is doing this correctly and not impacting the existing flooding problem we already have.

3.2 WATER QUALITY/WATER USERS

3.2.1 Verbal Comments Summarized From Scoping Meetings

3.2.2 Written Comments Submitted During the Comment Period

090606_Haugen – Is there an aquifer newly discovered South of Moorhead, west over the proposed diversion, and east of the Red? We wouldn't cause potential damage to clean water source in times of drought?

090629_Bezek_MNDNR – The potential for impacts to the Buffalo Aquifer need to be addressed in the consideration of alternatives.

3.3 WATER QUANTITY

3.3.1 Verbal Comments Summarized From Scoping Meetings

We thought the 1997 flood was much larger than a 100-year event.

Do all new developments build ponds to hold water, i.e., to not impact flood levels?

Winnipeg has 700-year level of protection from its bypass channel. Is that an option for Fargo-Moorhead?

What is the depth of water at Fargo vs farther north—does the river get deeper as it goes north?

Do any of your rules require that your projects be neutral down river (i.e. not making conditions worse downstream)?

3.3.2 Written Comments Submitted During the Comment Period

090522_Vaa – I am concerned about the hydrograph that was presented at the public meetings depicting that the peak flow from the 2009 event was higher then the 1897 event. I believe that this is misleading to the public and contributes to the perception that they have survived the worst flood event in recorded history. This can be attributed to the fact that in 1897 the width of the river at the Veterans Memorial Bridge was about 1 mile wide, and in 2009 the width is less than ½ mile wide.

I think the Corps should include in their presentations that the 2009 flood is not the flood of record.

090525_Keller – I feel that the Minnesota diversion alternative would protect folks in Fargo-Moorhead metro I fear it will cause additional issues for residents downstream.

3.4 FLOOD FIGHTING

3.4.1 Verbal Comments Summarized From Scoping Meetings

3.4.2 Written Comments Submitted During the Comment Period

090519_Bach - Is the goal of the project to eliminate the need for any temp/emergency levees/diking? If so, is there a protection level and are those costs included in the diversion costs?

090520_Miller - Is there a temporary flood fight design and plan which is being replaced by he permanent flood damage reduction considerations described in the article? (US Army Corps of Engineers unveils flood protection plans, by Helmut Schmidt)

Is there a flood hazard mitigation project listed in one or both communities and/or their respective county's hazard mitigation plan for floods?

3.5 SOCIAL ISSUES

3.5.1 Verbal Comments Summarized From Scoping Meetings

Will my house be impacted?

There will be a water war if Fargo puts 9 inches of water onto Minnesota.

What effect will the project have on the people who live at the confluence of the Wild Rice and the Red River area and those upstream?

Will your June 22nd deadline and project timeline be distributed within a public notice? Does this include an EIS as well?

On the topic of growth, will you be able to show us the growth plan for both cities? Will this include the cities' strategies for addressing flooding issues?

The diversion plan is routed toward Highway 75 – there would be issues with affecting the floodplain of the Buffalo River in this area. There are also potential issues with ditch systems that would require a hearing process.

There are two omissions in the presentation – you didn't address the land use problem. Farmers want to drain the land as quickly as possible, which is understandable, but it exacerbates flooding.

3.5.2 Written Comments Submitted During the Comment Period

090520_Olson - The Fargo Flood Plan is too restricted in scope. It appears as if developing the area is a priority, rather than flood control. My assumption is that politics has entered in. Individuals with prestige are spared intervention of flood control. This was verbalized at one meeting.

I resent the diversion planned on my property: (Stanley Township, South of County 14, Sections 25 and 26). This is devastating to the beautiful farmstead (which has been in our family since the 1880's), the tranquility and beauty of the river, the adjacent wooded area and the farm acreage. It is difficult for me to believe that this type of devastation could be handed to me.

It is not true that I am not interested in flood control. If need be, I will approve the planned dike (wet side) on the west rim of the property.

I chose to not develop my property. Others did, knowing they were in harm's way. Now I am needing to sacrifice my property when my family worked so hard to keep its ownership. Our family never asked for any assistance from the Federal, State, county, township or local governments. We kept working. By the way, the buildings on the farmstead have never experienced flood water.

090522_Vaa – I have concerns that this study might influence my possibility of a buyout. Could buyouts affect future plans for levee alignments?

090811_FPC – It is our understanding that the diversion option sizes have recently been changed; and, therefore, we believe more public comment is warranted.

3.6 ECONOMIC ISSUES

3.6.1 Verbal Comments Summarized From Scoping Meetings

What will the feasibility study cost the locals?

Will the feasibility study make any recommendations on how to finance this project?

How do we know that the Federal funding will be there for the study and the project?

Where does the money go?

How much of the \$625 million in the first estimate is attributed to the Southside Project? How would you characterize the economic value of the project?

In determining costs, are costs just related to physical damage, or is unemployment resulting from the flood keeping people from work factored in?

Is there a diversion channel that would reduce the costs per mile?

Does the \$600-million estimate comprise the current Southside estimate?

3.6.2 Written Comments Submitted During the Comment Period

090519_ Mathern - Our hospital was evacuated by Governor's order. There was a loss of \$750,000 net income during this time though very little property damage; such losses need to be included in the cost benefit analysis

090520_Paul & Deborah Kukowski – Thank you for the information. Concern: Economic and noneconomic impact of any diversion project on the communities and agriculture industry north of Kragnes, Minnesota.

090520_Koppang – Is there a breakdown of damages for Moorhead versus Fargo, or Minnesota communities versus North Dakota communities?

Are there cost breakdowns on a per capita basis for various local and/or state governmental entities involved under the two scenarios?

The damage estimates for 100-year flood seemed to indicate much more affected developed acreage in North Dakota versus Minnesota; the disparity seemed to grow for the 500-year event.

Will the damage estimates be used to determine the amount of dollars an individual local government is responsible for, once that project has an estimated price tag?

090606_Breker – I am interested in the economic analysis in all potential upstream water retention.

090608_ Bergan – How can the diversion have less total benefit?

090811_FPC – Fargo, North Dakota, voters recently showed their commitment by voting overwhelmingly to approve a tax increase to help pay for permanent flood protection.

Property values in our downtown and riverfront areas can be enhanced with a diversion system where they would be impacted downward by a levee system.

3.7 ENVIRONMENTAL

3.7.1 Verbal Comment Summarized From Scoping Meetings

How much impact analysis has been done in regard to wetlands and waters at this point?

You should consider channel stability, erosion and deposition in both the Red River as well as tributaries as a result of the project.

What will happen with fish passage in the area? How will they be affected by channel diversions? Is the U.S. Fish and Wildlife Service present?

The environmental impacts from flood fighting will be looked at as a temporary impact?

More probability should be incorporated to assess both environmental and economic risks. Environmental analysis should include the flood fight (temporary levies in place) as well as the alternative of no temporary action (no dikes or levies).

The city of Moorhead has concerns with the Buffalo Aquifer and wants to ensure that it is not impacted. A number of utilities cross the area where the concept diversion was planned; please take this into account.

North Dakota has a list of conservation priorities – there may be an interest in preserving some level of flooding for the benefit of the river ecosystem. Some fish species will be dependent on a natural flooding regime in certain areas.

Have you looked at the Minnesota Department of Natural Resources Heritage Information system?

What about wetland reclamation between Lake Traverse and Fargo Moorhead?

3.7.2 Written Comments Submitted During the Comment Period

090528_Erik_Jones – With regards to an eastern diversion channel, there would be issues with affecting the floodplain of the Buffalo River. There are also potential issues with ditch systems which would require a hearing process.

Potential impacts to the Buffalo River floodplain are related to breakouts from the Buffalo River in the Kragnes area. The latest flood insurance study (tentatively published yet this year) has breakouts along

the Buffalo River in the reach of the Buffalo River between about 80th Avenue North and 120th Avenue North. Considerations in the design of the diversion would be to take a careful look at the height of spoil banks along the diversion ditch. The preliminary diversion ditch cross-section had 14-foot-high spoil banks which may prevent the breakouts from the Buffalo River and hold enough water in the Buffalo River to affect the 100-year flood elevation.

3.8 STUDY AREA

3.8.1 Verbal Comments Summarized From Scoping Meetings

3.8.2 Written Comments Submitted During the Comment Period

090521_Linnertz- The flood control mentions nothing about the area of the Sheyenne River from the egress of the West Fargo Diversion to the Red River, this area floods terribly and should be included in the study area.

090622_NWF – We urge you to expand the study area to include all upstream watershed basins.

3.9 FARGO SOUTHSIDE PROJECT

3.9.1 Verbal Comments Submitted During the Comment Period

Southside Project

- a. Building levee (and storage) does not depend upon channel approval.
- b. Will Fargo begin levees before 1st phase Corps is finished?

Will the Southside Development be incorporated into your analysis as built?

Your project should take place before Fargo proceeds with its Southside project.

How does this study interface with the Fargo Southside (FSS) project?

If regional protection is the goal, why is Fargo's Southside Levee not on the table for a Corps project?

Execute Order 11988 on Floodplain Management (minimizing development in the floodplain) should be considered. Growth impacts from the Southside Project may open up the need for a more comprehensive analysis.

Can you confirm that there will be no impact from the FSS project?

FSS channel extensions will directly impact some landowners. What will happen if they are built and then the Corps diversion is built later?

FSS project is proposing 3 miles of channel extensions. Aren't these environmentally problematic?

There is concern that the whole FSS proposed package may not be implementable, especially the channel extensions in Minnesota.

Will the Corps look at the future with and without the FSS project?

Would Fargo build the FSS project without all of the proposed features?

Will the Southside Project solve the flood problem?

Could you talk about how the Southside Project will be synchronized with the USACE project? If Southside goes forward, how does it affect your project?

What is the impact of the Fargo Southside Flood Protection Plan? Will that area be factored into your benefit-cost ratio?

What impact does the Rose Creek project (the Fargo Southside Project) have on the Moorhead levees and the overall project?

3.9.2 Written Comments Submitted During the Comment Period

090519_Pat Staples – Please coordinate Southside Fargo Project with your plan. This needs to be synchronized!! Diversions appear to be the best long-term solution.

090606_Armfeld – Unless the Southside project is an important and a part of your plan why proceed?

090622_NWF – The Corps needs to consider the simultaneous actions of the FMM project and the Southside project, which calls into question requirements under NEPA regarding connected actions. These two actions are similar and would need to be handled in such a way.

090707_NDSWC – The North Dakota State Water Commission has pledged \$75 million toward the Fargo Southside Flood control project. We would request an expedited analysis of the FSFC project and its role in the various alternatives with regards to the Fargo Moorhead Metro project.

We would like to see any alternatives to be designed for larger events than those with 1-percent chance of occurrence.

We would like to see a host of alternatives developed to not only include levee options but diversions as well.

090709_EPA – We are concerned that the study goals and planning objectives for the Fargo Moorhead Metro study appear to be inextricably linked with the Fargo-Southside Flood Control Project.

090811_FPC – It should be noted the planned south side flood protection would not be needed and would save \$175 million.

3.10 TECHNICAL ISSUES

3.10.1 Verbal Comments Summarized From Scoping Meetings

What are the new 100-year and 500-year FEMA flood stages?

I don't understand how a 100-year flood could have a 1 in 4 chance of occurring over the next 30 years.

Did you factor in all historic events to figure out the 100-year and 500-year stages?

What is the level of protection we're looking for?

Are you designing a passive system or an active system?

It seems like we're doing the studies backwards—shouldn't we do the macro study first?

If we already know the micro solutions, why do the macro study?

I question the 1:4 odds you presented. The projects we're talking about will protect us.

Clarify "channelization."

Any other alternative routes would need to take place before the end of the feasibility phase, correct?

Will nonstructural solutions involve any efforts to lower the peak?

Will this only deal with flooding on the Red River, or will this be a regional study, e.g., including the Wild Rice River?

Will you be allowing limited flooding, or mitigating all flooding, e.g., agricultural field flooding? An indirect effect of flood protection may be to prevent all flooding in rural areas, which should be considered in your analysis.

Would the diversion have a grassed bottom or concrete? Who performs long-term maintenance? How will you ensure that the diversion does not result in a 30-mile-long stagnant pool of water?

How did you determine where your starting point and ending point would be for the Minnesota (east) diversion? Where does the water end up?

What is the current base flood elevation?

Flood fighting should not be counted in the No-Action alternative. No flood protection measures in place should be the baseline for initial water surface elevations

3.10.2 Written Comments Submitted During the Comment Period

090606_Ista – How far downstream do you measure impacts?

090606 Lahren – Why do you need a 500-foot-wide bottom for a diversion?

090714_Rhuland - I have a question about the \$625-million levee plan that was discussed at the recent meetings. I assume that there is a map available detailing what this project would look like in my neighborhood. Is that true? If so, can I get a look at what the area by Southwood Drive, 11th Street, and the Fargo Country Club looks like? In addition, how many homes would need to be removed for this project?

090811_FPC – We are concerned that any diversion plans are thoroughly studied with an effort to keep costs as low as possible. In addition, in order to evaluate the benefit-cost ratios properly, all possible benefits need to be discovered and properly applied to the ratios.

The benefits from reducing a 500- or 700-year flood to a winnable level should be included minus the costs of fighting the lower level flood. The cost effectiveness to fight a 100-year flood one time in 500 years versus making a larger diversion needs to be ascertained.

3.11 POLITICAL

3.11.1 Verbal Comments Summarized From Scoping Meetings

All of the cities that are developing should talk about their future plans before they build something that will be in the path of our project.

Cutoffs in Minnesota cannot be built without eminent domain, and Fargo cannot condemn land in Minnesota. They need to start working with a Minnesota partner.

How have you been working with mayors, other elected officials and other organizations?

Does USACE have a say in how we protect ourselves? I currently have a clay dike in my backyard and I could raise it – does USACE have anything to say about that?

Who is the decision maker that will identify which plan will be presented to Congress?

Why doesn't USACE have more jurisdictions over the root of the problem, which is the drainage of the landscape upstream?

Will you be looking at impacts downstream towards Canada?

FEMA, USFWS, EPA and the USACE should meet to discuss issues. At first glance, EPA believes that there may be similar and connected actions between the Southside and USACE projects.

Are there other stakeholders that should be involved?

Fargo and Cass County have proceeded with identifying buyouts, but Moorhead has not. What is the involvement of USACE and what is the hierarchy for decision making?

The goal of the FSS project is to get FEMA certification to avoid the need for flood insurance.

Is there a potential for FEMA's policies regarding flood insurance and grandfathering rates to change?

How does the future flood map affect development?

3.12 LAND USE AND FLOODPLAIN GROWTH

3.12.1 Verbal Comments Summarized From Scoping Meetings

Why build homes where the low ground and flooding is?

Benefit-cost ration — is that taking into account urban sprawl and future development?

Execute Order 11988 on Floodplain Management (minimizing development in the floodplain) should be considered. Growth impacts from the Southside Project may open up the need for a more comprehensive analysis.

When you look at the "future without project" do you look at future development in the area?

3.12.2 Written Comments Submitted During the Comment Period

090629_Bezek_MNDNR – It is recommended that structural flood protection measures not be utilized to promote development in currently undeveloped areas prone to flooding.

090709_EPA – The current land use planning and floodway zoning for Fargo and Moorhead should be disclosed in this study. Growth and redevelopment planning for the region should also be examined.

Indirect effects analysis should address the growth-inducing effects of the project related to changes in pattern of land use including impacts on farmland and other agricultural lands and population density. Changes in land use patterns should disclose local land use policies for Fargo and Moorhead related to residential and commercial building in or near floodways.

3.13 OTHER

3.13.1 Verbal Comments Summarized From Scoping Meetings

Great team. Great presentation. Very credible Federal presentation. ©

Very informative – Thank you

Very good presentation

Good start. Flood stage info- 39.5 on maps and graphs

Thank you for your time and efforts to help our community. I will pray for you and all your endeavors.

Lots of good information. Very Interesting. Thank you

Great job. Please notify of next meeting. Thanks.

Informative!! Thanks!

You done good!

Thanks for an outstanding presentation!

Why not protecting or including Forest River in the floodplain?

Kevin did an excellent job!

Might be good to know what the above sea level drop is between Wild Rice and Sheyenne confluence with the Red.

Hoping for protection in Harwood Groves area ASAP. Not waiting for additional 5 years.

What have we learned from the floods in Iowa last summer?

It seems like common sense to hold off on other projects until this regional plan is complete.

What other projects does the Corps have right now?

Why is the Corps coming in now?

What is in Phase 1—what will we know in April 2009?

Are the slides available in printed form, or can they be e-mailed out to people upon request?

Our comments are due on June 22nd...are we commenting on diversion channels, levees, etc.? Do you want us to reiterate our comments in writing?

Are you looking at executing an Official Cooperating Agency Agreement?

Why can't you build dikes on buyout land? Why wasn't Fargo flooding addressed with the Grand Forks project?

3.13.2 Written Comments Submitted During the Comment Period

090526_Bigger- Where would be the best place to find information regarding alternatives, sizes of diversion channels, etc.

090606_Headrick – How much info will be on your website as you continue to work on the study over the next 4 months?

No Date_Elise & John Leitch – Hurry, Hurry, Hurry!

090519_Shirley Syverson – Good informational meeting.

090519_Daniel Holm – Excellent presentation! Good materials, appreciate the effort to get feedback from the group

090520_Calvin Singleton – Need info, flood proofing by fill with clay.

090520_ Patte Kratky – As co-president of league of women voters of the Red River Valley and member of River Keepers, I offer my services to the planning boards, as a concierge. Please contact me at 701-235-8200 ext 7-204 currently or at my email address, a message maybe left at 218-233-8382 or email. We were displaced by the flood and are repairing our home. LWV is non-partisan, non-profit grass roots organization.

090709_EPA – The purpose and need for this project should clearly describe the current problem, and future problems that will result if the project is not implemented. EPA recommends that the signatories to the MOU for this project have an opportunity to comment on the "Purpose and Need" prior to alternatives development.

APPENDIX B

WRITTEN COMMENTS SCOPING MEETINGS

Moorhead, Minnesota November Meeting		 090602_Majkrzak
		• 090606_Armfeld
•	Anonymous Comments	• 090606_Breker
		• 090606_Haugen
Fargo, North Dakota November Meeting		 090606_Headrick
		• 090606_Ista
•	Anonymous Comments	• 090606_Keller
_		 090606_Koski
Fargo, North Dakota May Agency Scoping Meeting		• 090606_Lahren
M	eeting	• 090606_Sell
	Dalin Carrery EDA	• 090606_Wolf
•	Robin Coursen EPA	• 090608_Bergan
•	Nancy Steinberger, FEMA	• 090619_Bergan
•	Rick Archer, Ulteig	• 090621_Siemens
•	090528_Erik_Jones	• 090622_Bergan
•	090622_NWF	• 090622_Feist
•	090624_NDWF	• 090623_Satrang
•	090629_Bezek_MN_DNR	• 090623_Solberg
•	090707_NDSWC	• 090624_Furness
•	090709_EPA	• 090624_Moberg
Fargo, ND and Moorhead, MN May Meetings and Other Comments Received		• 090629_Boe
		• 090629_Bolin
aı	d other comments received	• 090629_Cossette
•	090417_Fitzpatrick	• 090629_Finch
•	090520_Koppang	• 090629_Halvorsen
•	090520_Miller	 090629_Schock
•	090520_Neuhauser	• 090629_Tillman
•	090520_Neuhauser	• 090630_Altendorf
•	090608_Sandt	• 090630_Bender
•	090608_Sandt	• 090630_Bredell
•		• 090630_Cronin
•		• 090630_Fetch
•	090521 Linnertz	• 090630_Forknell
•	090522_Vaa	• 090630_Hannaher
•	090528_Vaa	• 090630_Hegg
•	090525_Keller	• 090630_Hoefs
•	090526 Bigger	• 090630_Mitchell

• 090526_Bigger

- 090630_Moen
- 090630_Passolt
- 090630_Pfeiffer
- 090630_Werlinger
- 090701_Gates
- 090701_Ortmeier
- 090702_Dickerson
- 090712_Dufault
- 090714_Engler
- 090714_Rhuland
- 090715 Clasen
- 090715_Heidt
- 090715_Hoefs
- 090717 Bergman
- 090717_Holscher
- 090722_Fujimoto
- 090722_Jensen
- 090811_FPC
- 090606_Matthew Breker
- 090606_Jim Armfeld
- No Date_Dave Anderson
- No Date_Elise & John Leitch
- 090606_Charles Koski
- No Date_John Stern
- 090519_Kathy Laney
- 090519_Shirley Syverson
- 090606_Daryl Lahren

- 090519 Daniel Holm
- 090519_Charles D. Dunnell
- 090519_Pat Staples
- 090520_A Saharieff
- 090606_Diane Ista
- 090520_ Patte Kratky
- 090520_ Mark Nokken
- 090520_Jill Johnson-Davidson
- 090520_Calvin Singleton
- 090520_Gary Shramstad
- 090606_Deb Haugen
- 090520_Paul & Deborah Kukowski
- 090606 Barbara Headrick
- 090520 Chuck Stenso
- 090520_Deanne Sperling
- 090606_Stanley Wolf
- Nancy Steinberger
- Rick Archer
- Anonymous
- 090520_Reinke
- 090519_Cousins
- 090519_Bach
- 090519_ Mathern
- 090519_Mathern
- 090519_Mathern
- 090520 Olson

Appendix B Written Comments Scoping Meetings

Moorhead, Minnesota November 17, 2008 Public Meeting
Fargo, North Dakota November 18, 2008 Public Meeting
Fargo, North Dakota May 20, 2009 Agency Meeting
Fargo, North Dakota May 19, 2009 Public Meeting
Moorhead, Minnesota May 20, 2009 Public Meeting

Fargo-Moorhead Metro Feasibility Study Public Meetings, Moorhead Nov 17th, 2008

- 1) Informative!! Thanks!
- 2) You done good!
- 3) Thanks for an outstanding presentation!
- 4) The projected cost is likely far in excess of potential benefit. Your study should take place before Fargo proceeds with its Southside flood project.
- 5) Lots of good information. Very Interesting. Thank you
- 6) Great job. Please notify of next meeting. Thanks.
- 7) Southside Project
 - a. Building levee (& storage) does not depend upon channel approval.
 - b. Will Fargo begin levees before 1st phase corps is finished?
- 8) Great team. Great presentation. Very credible Federal presentation. ©
- 9) Very informative Thank you
- 10) Very good presentation
- 11) Good start. Flood stage info- 39.5 on maps and graphs
- 12) Thank you for your time and efforts to help our community. I will pray for you and all your endeavors.

Fargo-Moorhead Metro Feasibility Study Public Meetings, Fargo, North Dakota Nov 18th, 2008

1)

- a. Question doing macro study after implementing micro solutions.
- b. Question assumption that floods are going to get much worse in future as evidence does not support this.
- c. Waffle Storage concept should be reconsidered where farmers are paid for storage when needed.
- 2) Why not protecting or including Forest River in the floodplain?
- 3) Kevin did an excellent job!
- 4) Might be good to know what the above sea level drop is between Wild Rice and Sheyenne confluence with the Red.
- 5) Hoping for protection in Harwood Groves area asap. Not waiting for additional 5 yrs.

Fargo-Moorhead Metro Feasibility Study Agency Meeting, Fargo, North Dakota May 20th, 2009

Robin Coursen EPA

EPA is concerned that these two projects are about to commence two separate EISs with basically the same purpose and need; to control flooding in the Fargo-Moorhead metropolitan area. Further, EPA believes that the Fargo Southside Project is a connected action to the Fargo-Moorhead Project. As part of the scoping process for the Fargo Southside Project and in accordance with 40 CFR Section 1508.25, EPA recommends that FEMA as lead agency, should determine (in consultation with other resource agencies) whether the Fargo Southside Project is a similar or connected action to the Fargo-Moorhead Flood Control Project and whether it requires a single comprehensive EIS. In addition, FEMA should also consult with the U.S. Army Corp of Engineers (COE) to determine whether the project is a "single and complete project" (33 CFR 330.2(i) and whether it meets the test of "Independent Utility" when considering simultaneous, possibly connected, actions for flood control that COE will be permitting for both of these projects. The Corps and the Cities of Fargo and Moorhead are jointly conducting this study. The study will assess the feasibility of measures to reduce flood risk in the entire metropolitan and surrounding area. The study will consider an array of potential alternatives including non-structural flood-proofing, diversion channels, levee/floodwall systems, and flood storage.

EPA believes that the Fargo-Moorhead Project is connected with Fargo Southside in its environmental results (flood control for the region) and impacts (particularly wetlands and riparian habitat). We are concerned that the completion of the Fargo Southside EIS independent of the Fargo-Moorhead Flood Control Project will:

- 1. Minimize analysis of full cumulative environmental effects resulting from both projects
- 2. Unacceptably influence or limit the alternatives analysis for the Fargo-Moorhead Flood Control Project
- 3. Cause duplicative expenditure of public resources by both State and Federal agencies involved with both projects
- 4. Not comprehensively address the regional flood control problem and
- 5. Not result in good decision making that is in conformance with CEQ NEPA regulations.

Although the Southside Flood Project and the Fargo and Moorhead Flood Risk Management Project are projects led by different agencies—FEMA and COE respectively, EPA strongly recommends that both agencies consider that these projects are connected or similar actions as described under 40 CFR Sec. 1508.25 of the CEQ regulations.

Nancy Steinberger FEMA Region 8 Denver Federal Center

Please keep me in the loop on H & H modeling efforts. FEMA is currently working on models for the Sheyenne and Maple Rivers. We have a preliminary digital flood insurance rate map coming to Fargo in Summer 09 and a Cass County DFIRM shortly thereafter (1 year out).

"No Action" should not include flood fighting. Emergency measures can cause a rise in flood elevations. If that's the baseline, the project could slip through as not causing a rise even if it does. Flood permits from all affected communities will be required. A CLOMAR and LOMR will be required.

Rick Archer, Ulteig Engineering, INC

Recent 2009 flooding has resulted in discrepancies between projected river gage water surface elevations with recorded flood discharges. This may be due to different stream set-up conditions (Sheyenne) than what original flood plain model is showing, or due to flood fight efforts. I would like COE to look more closely at Hydraulic conditions that may be leading to WSE discrepancies.

EPA Region 8 Draft of Fargo scoping comments 08/27/09

Studies:

It would be helpful to understand how the information in previous studies, reports and projects will be integrated and utilized in the Feasibility Study and what additional studies, e.g. hydrologic basin wide flow regimes, climate/precipitation analysis, are anticipated to be undertaken. Do the studies conducted to date answer many of the questions that have been asked in this scoping document by reviewers? E.g. what percent of high flows are due to increased flow rates from precipitation? What percent of high flows are due to increased flow rates from wetland drainage/and or lack of wetland drainage where agricultural development and urban sprawl has taken over wetland/upland storage. A look at the entire basin is necessary to examine the effectiveness of wetland restoration or waffling or other non-structural alternatives.

Regarding Climate Change studies: What does the most current data show for anticipated flood frequency, timing and severity?

Purpose and Need:

The Purpose and Need statement is fairly good; not too narrow, not too broad.

Objectives of the project should be discussed with the purpose and need and could include reducing peak flows, slowing runoff, sustainable cost effective solutions that mimic natural processes, and exploring opportunities for recreation/open space.

EPA suggests that this document discuss how the process of alternatives development will proceed and how alternatives will be screened. EPA recommends that the purpose and need statement be accompanied by some criteria to measure whether or not alternatives meet the purpose and need and objectives of the project. Such criteria could be utilized for screening purposes and could include but not be limited to the following: Meets project purpose and need and objectives, sustainability and or ability to mimic natural processes, technical feasibility/implementability, capital costs, O and M and/or adaptive management costs, ability to phase if project costs are incremental, cost benefits or economic value (ecological/recreational/carbon offsets for riparian and wetland restoration).

How will the cooperating agencies be involved with this process?

Alternatives Analysis:

The alternatives analysis should include a *Sustainability Alternative* that looks at a number of approaches. Sustainable development and the use of zoning, agricultural/conservation easements to maintain/enlarge the floodway should be addressed. How will redevelopment and new growth be encouraged to develop in a

manner that protects the homes, roads, and other infrastructure from flood risk and/or damage. This alternative could also explore nature mimicry to address flooding through non structural measures such as wetland, riparian habitat, and grasslands. This alternative could also explore the secondary benefits of recreational development (wetlands to open space/fish habitat) and possibly crop selection for high water usage (from upland grasslands or former agricultural land used for distributed storage areas).

Strategic Planning:

Since the costs of such projects are the primary obstacles to implementation, the Corps could explore ways to tier the EIS so that funding could happen incrementally. The Phase I of the Feasibility Study indicates that you are already considering this type of scenario.

From: <u>Erik Jones</u>

To: <u>Sobiech, Jonathan J MVP;</u>

cc: <u>Bruce Albright;</u>

Subject: RE: Fargo Moorhead Metro Scoping Meeting

Date: Thursday, May 28, 2009 5:10:07 PM

Attachments: Figure 13D_SurfaceWaterResourcesMap_Northern.pdf

Figure 13A_SurfaceWaterResourcesMap_Western_portrait.pdf

Figure 13C_SurfaceWaterResourcesMap_Moorhead.pdf

Jon,

Here is the additional information pertaining to the question below:

Erik Jones, Houston Engineering

Q. The diversion plan is routed towards Highway 75 - there would be issues with affecting the floodplain of the Buffalo River in this area. There are also potential issues with ditch systems which would require a hearing process.

A. Please provide us of additional information.

Additional Info:

As shown on the preliminary MN diversion route map as distributed at the meeting (labeled "PLATE 1"), the following legal County Ditches would be affected (from south to north): Clay County Ditches Nos. 33, 32, 9, 41, Lateral 1 of County Ditch 41, 35, 51, and Lateral 1 of County Ditch 20. If the diversion route were moved further north/south, additional legal ditch systems could be affected. I've attached a series of maps showing the various ditch locations. From north to south they are labeled "Northern", "Moorhead", and "Western" corresponding to planning regions within the Watershed's Management Plan. Following MN drainage law (Minnesota Statutes 103E.)These systems might proceed under 103E.227 IMPOUNDING AND DIVERSION OF DRAINAGE SYSTEM WATERS. The Watershed District would need to confirm the statute under which the proceeding would follow but I believe 103E.227 would be correct.

For portions of some of the ditch systems, it may make sense to abandon (MN Statutes 103.811) and other systems may require a redetermination of Benefits due to the drainage area being severed by the diversion ditch. A redetermination would need to follow Minnesota Statute 103E.351.

All of these proceedings require one hearing regardless of the statute. This would be required for each system, although the hearings may be able to be grouped together or in series if it makes sense.

More detail on Minnesota Drainage Law (MS 103E) can be found at the following

link:

https://www.revisor.leg.state.mn.us/statutes/?year=2008&id=103E

Potential impacts to the Buffalo River Floodplain are related to breakouts from the Buffalo River in the Kragnes area. The latest Flood insurance study (tentatively published yet this year) has breakouts along the Buffalo River in the reach of the Buffalo River between about 80th Avenue North and 120th Avenue North. Considerations in the design of the diversion would be to take a careful look at the height of spoil banks along the diversion ditch. The preliminary diversion ditch cross-section had 14 foot high spoil banks which may prevent the breakouts from the Buffalo River and hold enough water in the Buffalo River to affect the 100-year flood elevation.

If you have questions, let me know.

Thanks,

Erik S. Jones, PE LSI Project Manager

1401 21st Avenue North, Fargo, ND 58102 Phone: 701.237.5065 / Fax: 701.237.5101

Direct Phone: 701.499.2055

Email: ejones@houstoneng.com Website: www.houstoneng.com

Note: We have moved. New address above

-----Original Message-----

From: Sobiech, Jonathan J MVP [mailto:Jonathan.J.Sobiech@usace.army.mil]

Sent: Thursday, May 28, 2009 2:32 PM

To: chad.severts@state.mn.us; michele.walker@dnr.state.mn.us; tom. grashens@dnr.state.mn.us; bob.bezek@dnr.state.mn.us; thomas.carlson@dnr. state.mn.us; julie@redriverbasincommission.org; rgjestvang@nd.gov; pfridge@nd.gov; C. Gregg Thielman; allison.myhre@mail.house.gov; andy. martin@klobuchar.senate.gov; bkreft@nd.gov; nancy.steinberger@dhs.gov; jeanine.petterson@dhs.gov; mike.hillenburg@dhs.gov; kris.carlson@ulteng.com; jvolk@moorengineeringinc.com; david.overbo@co.clay.mn.us; john. frederick@state.mn.us; brrwd@bville.mn.net; markbrodshaug@gmail.com; Erik Jones; Coursen.Robin@epamail.epa.gov; truskowski.brent@epa.gov; steven. hardegen@dhs.gov

Subject: Fargo Moorhead Metro Scoping Meeting

I have attached a draft of the notes from the Scoping meeting, I would like all of

the folks that commented to review it to make sure we captured your comments accurately, if you could look it over and get it back to me NLT 5-June 09 that would be great. I will look at the comments incorporate them and send out the final memo for record. Thanks to all of you for participating. Again I ask that you send me any other contacts that are necessary for this EIS. Thanks. Jon

Jonathan Sobiech Forester US Army Corps of Engineers 190 East 5th St, Suite 401 St Paul, MN 55101 Office phone 651-290-5428 Cell 651-380-0979 fax 651-290-5258



NATIONAL WILDLIFE FEDERATION®

Northern Rockies and Prairies Regional Center

240 N Higgins, #2 * Missoula, MT 59802 * Tel: 406-721-6705 * Fax: 406-721-6714 * www.nwf.org

June 22, 2009

Terry J. Birkenstock, Chief, Environmental and Economic Analysis Branch, 190 Fifth Street East, St. Paul, MN 55101–1638

> Re: Scoping Comments on Proposed Flood Risk Management Project on the Red River of the North

Dear Mr. Birkenstock:

On behalf of the National Wildlife Federation, we offer these scoping comments on the Environmental Impact Statement being prepared by the Corps of Engineers on the Flood Risk Management Project on the Red River of the North.

In the Notice of Intent (74 Fed. Reg. 20684, May 5, 2008), the Corps of Engineers proposed to evaluate measures for reducing flood risk in the Fargo-Moorhead Metropolitan Study Area. Alternatives to be evaluated include, but are not limited to, levees and floodwalls, diversion channels, non-structural flood proofing, relocation of flood prone structures, and flood storage.

In order to evaluate a full range of alternatives, we urge the COE to 1) expand the study area to include all upstream watershed basins and 2) evaluate wetland restoration and other non-structural approaches as an alternative for flood control and protection.

In preparing this scoping letter, we have been impressed by the amount and quality of the literature available that evaluates wetland restoration and other non-structural mechanisms as an alternative to structural approaches to flood control. From our perspective, levee construction and diversions are very expensive, threaten downstream communities with additional flood hazard and offer no environmental benefits. In contrast, wetland restoration can reduce flood peaks and shift the timing of flood events even while providing a broad array of ancillary benefits including cleaner water, larger fish and wildlife populations and enhanced recreational opportunities. We note too, that such benefits have real economic value.

In addition to much research on the positive benefits of wetland restoration, related studies have also demonstrated that wetland drainage in the Red River basin have significantly increased both

the timing and size of Red River floods and also that wetland drainage continues to effect thousands of acres annually. Wetland restoration will help offset these destructive land use practices that are so costly in terms of water quality, wildlife and flood costs.

Because wetland restoration and better watershed management are an economical, ecological and sustainable method for flood control, we strongly urge for the Army Crops of Engineers to go beyond the "quick-fix", expensive and finite solution of levees and diversions, and consider looking "upstream" to a watershed/wetland approach to managing flooding on the Red River.

A. The EIS Must Utilize a Larger Study Area and Evaluate the Impacts of Wetland Drainage on Flood Frequency, Flood Timing and Flood Severity.

The Notice of Intent suggests that the EIS being prepared by the Corps will only evaluate flood impacts and alternatives measures to prevent flooding within the Fargo-Moorhead Metropolitan Area. This limited study area will not allow the Corps to accurately evaluate the causes of increased flooding in the Red River Basin or the full range of alternative remedies, including wetland restoration and other watershed management possibilities. Ample evidence demonstrates that wetland drainage throughout the Red River basin has significantly contributed to increased flood frequencies and flood peaks.

The prairie pothole wetlands of the northern Great Plains are one of the world's great natural resource treasures. Within this 300,000 square mile area, retreating glaciers left tens of thousands of small depressions that seasonally fill with water and provide habitat for millions of waterfowl, shore birds and other wildlife species. Almost since farming began in this region in the mid 1800's, wetland drainage has been employed to increase tillable acreage and to facilitate other agricultural activities. The cumulative impacts of this wetland drainage have been staggering. Over the last 100 years, and especially since the end of the Second World War, over 50% of the region's wetlands have been drained with over 90% in some watershed basins.

In addition to the severe impacts to wildlife and water quality, wetland drainage has also impacted the timing, frequency and severity of floods throughout the region. Wetland drains and channels literally crisscross the entire region and dramatically accelerate spring run-off and reduce upstream, upland water storage capacity.

For example, much of the damage caused by the extensive flooding along the Mississippi River in 1993 resulted from levee failure as the river reestablished historic connections to the floodplain as well as the loss of upstream wetland storage and the alteration of the landscape that encouraged water to quickly drain into the nearest river or stream. Indeed, a recent study by The Wetlands Initiative noted that the wetlands lost in the upper Mississippi River had the capacity to retain all of the water that caused the 1993 flooding. Thus, although elaborate storage dam and levee systems can "reclaim" the floodplain for agriculture and human settlement in most years, the increasingly frequent and inevitable large floods the Great Plains and Midwest are seeing impose high disaster costs to society.

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Evidence strongly suggests that wetland drainage has significantly impacted flooding in the Red river basin. In fact, the Red River basin has experience 8 of the 10 all time record flood crests in the past 30 years. One study dealing with watershed contributions to the Red River was published 28 years ago by soil scientists at North Dakota State University. It found an average 60% increase in stream flow rates and concluded that:

Significant increases in flow to the Maple, Wild Rice and Goose Rivers have occurred over the last 30 to 40 years. Flow rates were shown to be related to climate (precipitation), however, there appears to be no chance in precipitation patterns to account for increase in flow rates. Predicted flow rates were shown to be closely related to basin size due to land drainage in the Maple River and Goose River basins.

Since this study was published, wetland drainage has continued throughout the Red River.

Based on this information, the EIS should enlarge the study area to include all upstream river basins above Fargo-Moorhead. In taking this step, the EIS will necessarily have to evaluate the impacts on flood crests, flood frequencies and flood severity of wetland drainage. Through this evaluation, the EIS can then take the next and most critical step — evaluating the benefits of wetland restoration in terms of reducing these flood impacts.

B. The EIS Must Develop a Wetland Restoration Alternative

Restoring upstream storage capacity must be studied as an alternative to flood mitigation for the Red River. Several studies have demonstrated the effectiveness and feasibility of restoring wetlands or using upland depressions to temporarily store water during a flood event. One such study concluded that, "non-structural means as temporary storage of runoff on agricultural lands in the upland areas of the watershed during periods when flood risks are high, may provide ecological benefits...at the same time diminishing the threat of downstream flooding." Another study concluded that, "floodwater attenuation is one of the most widely recognized ecosystem services provided by restored wetlands..." The potential storage capacity on USDA program lands in the PPR alone is, conservatively, 56,513 ha-m (458,151 acre-feet) of water, if filled to maximum capacity. Additionally, restoring drained and farmed wetlands could increase the water retention capacity of a watershed in the PPR of Minnesota, "by up to 63%." Depressional wetlands in the Devils Lake basin of North Dakota have the potential to store around 72% of the total runoff volume from a 2-year frequency runoff event and 41% of a 100-year frequency runoff event.

1. The Restoration of Wetlands can significantly reduce flood frequency and severity while also providing vital ecosystem benefits.

The benefits of wetland restoration are numerous. Wetlands provide various ecosystem services to farmers and communities, recreational opportunities, global warming mitigation, and most importantly, flood control. One study concluded that, "wetlands on [USDA] program lands [in the PPR] have significant potential to intercept and store precipitation that otherwise might

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contribute to "downstream" flooding.⁵ Additionally, the "conversion of cultivated cropland to grassland cover as part of conservation programs results in a reduction in surface runoff and, ultimately, reduces the rate at which a basin refills and overflows.⁶

An Army Corps study on the Charles River in Massachusetts concluded that the floodplain wetlands were so effective for flood control the Corps purchased the wetlands rather than drain them to build a levee system. Maintaining the 3,400 ha of wetlands in the Charles River basin rather than draining them saved Boston an additional \$17 million in flood damages per year. Another study looking at the relationship between upstream wetland drainage and downstream flooding concluded that, the increase in peak stream flow was significant for all sizes of streams when wetlands were removed. 8

Utilizing wetlands for flood protections provide a multitude of additional benefits. Increasing wetland habitat will provide stability to migrating and nesting bird habitats as well as numerous other species of wildlife. This in turn creates opportunities for hunting, fishing, bird watching, hiking and other types of recreation. Wetlands also serve as nature's kidneys, filtering polluted water and releasing cleaner water into both nearby ground and surface waters. This improves water quality. Wetlands further serve to recharge ground and surface waters, meaning that while they prevent flooding in wet times, they serve to replenish and retain adequate water supplies and stream flow during drier times. As climate change increases the severity and frequency of both floods and droughts, these functions will become crucial to maintaining healthy aquatic systems and to protecting communities from the impacts of climate change. Wetlands play at least two critical roles in mitigating the effects of climate change, "one in the management of greenhouse gases (especially carbon dioxide) and the other in physically buffering climate change impacts."9 Studies show the great potential for wetlands to act as carbon sinks to sequester carbon, thus mitigating the impacts of global warming. USGS data suggests that terrestrial carbon capture may be greater in wetlands over smaller acreage than the potential capture on a larger area of cropland, 10

Given the multitude of benefits in addition to flood protection that wetland restoration provides, especially in light of the many challenges presented by climate change, it is the most effective, affordable, and ecologically sound solution for the Red River basin, and must be given the full consideration of the Army Corps of Engineers, when preparing the EIS for the proposed flood protection plan, found at 74 FR 20684.

2. The Prairie Pothole Region (PPR) Provides Viable Wetland Restoration Opportunities

The prairie landscape, prior to major drainage and alteration after European settlement, was defined by its wetlands. This system of wetlands is still vitally important today, but in need of restoration to provide the functions it once provided. The significance of the prairie wetland landscape is exemplified in the Prairie Pothole Region (PPR) of the United States and Canada. This area extends over 300,000 square miles from north central Iowa and western Minnesota

through North and South Dakota, into eastern Montana and north into Canada. The unique Prairie Pothole ecosystem is the result of retreating glaciers, which left the landscape dotted with pothole wetlands. Despite the harsh climate of wet/dry cycles, winter freezing and varied salinity, "the PPR is an extremely productive area for both agricultural products and wildlife." The PPR ecosystem is of "unparalleled importance to breeding waterfowl and many other species of wetland wildlife," in addition to acting as a nutrient sink, storing runoff to reduce flooding, sequestering carbon and providing other "environmental and socio-economic values." The PPR hosts more than 300 species of birds which rely on this region – "177 species for breeding and nesting habitat and another 130 for feeding and resting during spring and fall migrations." The PPR is a vital resting and replenishing area for migratory birds. Waterfowl banded in the PPR have been found in 46 other states, 10 Canadian provinces and 23 other countries. In addition to birds, muskrats, foxes, deer and a variety of other wildlife rely on the PPR.

Besides a rich wildlife habitat, the PPR captures precipitation and mitigates flooding. Historically, over "80% of the land surface drained into potholes rather than streams and rivers," where the water would then evaporate or seep into the ground, recharging underground aquifers. ¹⁸ Grasslands further reduced the runoff of water and sediment, creating a more stable water level and enabled the area to host a diverse community of native grasses, sedges, rushes and other submersed vegetation. ¹⁹ Given the multitude of benefits provided by the PPR, the InterGovernmental Panel on Climate Change (IPCC) concluded in a special report that, "Any additional stress [to the PPR] would be of great concern and could be accommodated only through active programs to protect, enhance, and increase wetland areas in this region." ²⁰

3. The Waffle Project, combined with Wetland Restoration is also a viable alternative.

One effort currently being studied and potentially implemented in the Red River basin is called the Waffle Project. The Energy & Environmental Research Center (EERC) "recognized the need for alternative methods of flood protection to augment existing flood protection measures. This sentiment was mirrored by other major organizations and agencies in the Red River Basin, and it was determined that innovative concepts of nonstructural measures should be explored to augment the design capacities of structural measures planned to protect against future floods similar in scope to, or greater than, the 1997 flood."²¹

As Minnesota Public Radio reported in 2006, "the waffle plan is simple. Existing roads serve as levees to store water in farmers' fields. The potential for storage is amazing. One square mile storing water a foot deep would hold more than 200 million gallons of water." Because this plan looks to slow the movement of water entering the system at any time, the chances of flooding are greatly minimized. The additional benefit of the plan would allow the retained water to recharge the aquifer and prevent droughts in the future. The Waffle Plan is also a more affordable solution to mitigating flood damage, with the pricetag to implement the Plan across the Red River basin "estimated at \$50 million. The protective dike system in Grand Forks cost \$397 million." And, the estimated cost of levees or a diversion channel along the Red River far exceed Grand Forks at \$625 million and \$909 million, respectively.

In this economy, haphazard spending for a levee or diversion project is not only unwarranted, but also irresponsible management of resources, both economically and ecologically. And the extraneous building costs are not a one-time expense. Levees will require continued spending for maintenance and upkeep, and they are uncertain to retain flood waters in our world of extreme weather patterns, so greater structures may have to be built in the future, at greater costs, in order to seize the swelling waters of the Red River.

When the Waffle Project is implemented in conjunction with continued wetland restoration, a successful and long-term flood protection plan results. Programs such as the Waffle Project, Wetland Reserve Program, and other studies and programs through Ducks Unlimited, US Fish & Wildlife, and numerous other agencies and organizations, provide ample data and opportunity to implement wetland restoration as a significant option to prevent flooding downstream.

C. The EIS Must Utilize a Larger Study Area and Consider Wetland Restoration Alternatives in Order to Comply With the National Environmental Policy Act.

An additional requirement for the Army Corps to consider in its EIS are the simultaneous actions of the Fargo-Moorehead Metro Project and the Southside Flood Control Project, which calls into question requirements under NEPA regarding connected actions. An assessment of cumulative impacts is required by the Council on Environmental Quality (CEQ) regulations under NEPA. Cumulative effects are defined as, "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions."

When considering whether there are cumulative effects or connected actions, an agency must look at the scope of the proposed project and must consider 3 types of actions: connected actions, cumulative actions and similar actions. A connected action means that there is a close relationship between actions which must be considered in a single EIS. Similarly, a single EIS must be prepared for cumulative actions, which when viewed with other actions "have cumulatively significant impacts and should therefore be discusses in the same impact statement." A similar action is one, when viewed with other proposed or reasonably foreseeable actions have similarities that would be reasonable to analyze together in a single impact statement. In the context of the Fargo-Moorhead and Southside Projects, given their timing, scope, relatedness, and proximity, the projects would be considered cumulative actions, and are required, by NEPA, to be considered under a single EIS.

Thank you for considering the comments on the Notice of Intent. Please feel free to contact any us if you would like additional information.

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Ulmas trance

Thomas France, Regional Executive Director

Endnotes:

¹ A. Manale, (Summer 2000). Flood and Water Quality Management trough Targeted, Temporary Restoration of Landscape Functions: Paying upland farmers to control runoff, *Journal of Soil and Water Conservation 55.3*, 285.

² USGS, Robert A. Gleason & Brian A. Tangen, Ecosystem Services Derived from Wetland Conservation Practices in the United States Prairie Pothole Region with an Emphasis on the U.S. Department of Agriculture Conservation Reserve and Wetlands Reserve Programs ch. D: Floodwater Storage, http://pubs.usgs.gov/pp/1745/pdf/pp1745web.pdf (accessed June 10, 2009).

 $^{^3}$ Id.

⁴ Id.

⁵ Gleason & Tangen, supra n. 2.

⁶ Id

⁷ William J. Mitsch & James G. Gosseling, Wetlands, 347 (John Wiley & Sons, 2007).

Id.. at 349.

⁹ The Ramsar Convention on Wetlands, *Wetland Values and Function: Climate Change Mitigation*, http://www.ramsar.org/info/values_climate_e.htm (last updated Dec. 21, 2000).

¹⁰ USGS, *Prairie Wetlands are Important for Carbon Storage*, http://biology.usgs.gov/cro/Fact%20Sheets/carbonnewban.pdf (last updated July 2002).

¹¹ Susan M. Galatowitsch & Arnold G. van der Valk, *Restoring Prairie Wetlands: An Ecological Approach*, vii (Iowa St. U. Press 1994).

¹² USGS, Wetlands of the Prairie Pothole Region: Invertebrate Species Composition, Ecology, and Management, http://www.npwrc.usgs.gov/resource/wetlands/pothole/prairie.htm (last updated Aug. 3, 3006).

¹³ Id.

Rex R. Johnson, Fred T. Oslund & Dan R. Hertel, (May/June 2008). The past, present and future of prairie potholes in the United States, *Journal of Soil and Water Conservation 63*(3), 85A.

¹⁵ U.S. Fish & Wildlife Service, Press Release: Prairie Pothole Region to Receive \$21 Million for Habitat Acquisition, http://www.fws.gov/mountain-prairie/PRESSREL/04-16.htm (March 8, 2004).

¹⁷ Gary L. Pearson, *Draining the Great Marsh*, USA Today (Nov. 1985).

¹⁸ Johnson, et. al., supra n. 14.

¹⁹ Id.

²⁰ InterGovernmental Panel on Climate Change, *The Regional Impacts of Climate Change* ch. 8: North America, http://www.ipcc.ch/ipccreports/sres/regional/202.htm (accessed June 22, 2009).

Bethany Bolles, Xixi Wang, Lynette de Silva, Heith Dokken, Gerald Groenewold, Wesley Peck & Edward Steadman, *An Innovative, Basinwide Approach to Flood Mitigation: The Waffle Project*, http://www.undeerc.org/Waffle/info/pdfs/bb-floodmitigation.pdf (accessed June 4, 2009).

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 $^{^{\}rm 22}$ Bob Reha, Waffle Plan researchers convinced they can lower flood levels, Minnesota NPR,

http://minnesota.publicradio.org/display/web/2006/04/13/waffleredux/ (April 17, 2006).

23 Id.

24 See Council on Environmental Quality, Considering Cumulative Effects Under the National Environmental Policy Act (Jan. 1997).

25 40 CFR § 1508.7

26 40 C.F.R. § 1508.25

²⁷ 40 C.F.R. § 1508.25(a)(2). ²⁸ 40 C.F.R. § 1508.25(a)(3). ²⁹ 42 USC §§ 4321, et. seq. *See also, Kleppe v. Sierra Club*, 427 U.S. 390, 96 S.Ct. 2718 (1976).

From: Jennifer Kross [jkross@ducks.org]

Sent: Wednesday, June 24, 2009 10:12 AM

France Crois O MVD: Studen Agran M

To: Evans, Craig O MVP; Snyder, Aaron M MVP

Subject: Red River Flood input from North Dakota Wildlife Federation

Attachments: NDWF Flood Protection Response 6 18 09.pdf; Brun et al 1981

Stream Flow.pdf





NDWF Flood Brun et al 1981 rotection Response. Stream Flow.pd...

Mr. Evans and Mr. Snyder,

Attached is a letter from the North Dakota Wildlife Federation with comments regarding Red River flood protection efforts. Also attached is a copy of a document on stream flow changes in the Red River Valley. Thank you for accepting our input. I am also sending a copy of this letter to Mayor Dennis Walaker, Mayor Mark Voxland, Senator Kent Conrad, Senator Byron Dorgan, and Representative Earl Pomeroy for their information.

Please contact me if you would like to further discuss this issue.

Jennifer

Jennifer P. Kross

Ducks Unlimited, Communications Biologist

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Jennifer P. Kross on behalf of North Dakota Wildlife Federation 320 17th Ave. NE Jamestown, ND 58401 701-368-9329 June 24, 2009

RE: Flood protection planning for Fargo/Moorhead

ATTN: Craig Evans and Aaron Snyder U.S. Army Corps of Engineers St. Paul District Sibley Square at Mears Park 190 5th Street East, Suite 401 St. Paul, MN 55101-1638

Mr. Evans and Mr. Snyder,

On behalf of the North Dakota Wildlife Federation (NDWF) I am writing to encourage you to incorporate use of natural resources and wetlands in efforts to protect Fargo/Moorhead from future flooding. Multiple factors led to the flooding that occurred in Fargo/Moorhead this year and the NDWF believes that it is necessary to use multiple solutions that span the entire watershed for flood protection planning.

North Dakota has a wealth of natural resource managers and professionals who can advise on flood solutions that involve wetland and grassland use throughout the Red River basin. The North Dakota Game and Fish Department and the staff at National Wildlife Refuges in the basin have experience and expertise to provide long-term, sustainable solutions that will reduce flood waters that devastate our communities as well as enrich our state's wildlife habitat.

One significant example where wetlands helped save a community from devastating flooding occurred in 2000 when the Turtle River flooded. The U.S. Fish and Wildlife Service opened up Kellys Slough National Wildlife Refuge and diverted 20,000 acre feet of water to the refuge. The water absorbed by the wetlands provided much need relief for the town of Manvel. Roger Hollevoet manager of U.S. Fish and Wildlife Service at Devils Lake Wetlands Management District was quoted as saying, "wetlands are more or less nature's natural sponges. They are a valuable component of flood control."

In the Turtle River case it was rain water that caused flooding, but wetlands can be used for multipurpose water management and help to absorb excessive snow melt and spring

runoff. The multiple functions wetlands and grasslands can provide in holding snow, runoff water and rain can reduce pressures on levees and dams. These natural resources can also reduce river and stream flows enough to decrease the impact of dramatic flooding on communities.

When planning flood control for the Fargo/Cass County area we ask that you please include Red River Basin and watershed wide solutions that incorporate wetlands and grasslands. We are available for consult on how to implement these strategies.

Sincerely,

Jennifer P. Kross

Executive Board Member

North Dakota Wildlife Federation

701-368-9329

jkross@ducks.org

CC: Mayor Dennis Walaker

Mayor Mark Voxland

Senator Kent Conrad

Senator Byron Dorgan

Representative Earl Pomeroy

Enclosure: (1) Stream Flow Changes in the Southern Red River Valley of North Dakota by L. J. Brun, J. L. Richardson, J. W. Enz and J. K. Larsen

1961

Stream Flow Changes of North Dakota

L. J. Brun, J. L. Richardson, J. W. Enz and J. K. Larsen

Climatic events in recent years have had major impact on the economic well-being of many North Dakotans. The summer flood of 1975 destroyed thousands of acres of crops in the southern Red River Valley, caused major soil erosion, destroyed bridges, and damaged homes, farmsteads, and other property. The statewide spring and summer drought of 1980 was comparable to that of 1934 and 1936, resulting in complete crop failure in some areas. These events are directly attributable to extreme climatic situations.

At the same time, flooding has occurred in recent years when the climatic conditions would not be regarded as extreme and in areas where flooding previously has not been a serious problem. Old time residents of Enderlin, along the Maple River, state that flooding had never been a problem until about 20 years ago. Now, houses in a major section of the town have been abandoned because of repeated flooding.

The problem of flooding is a controversial and emotional issue. There are charges and statements as to causes and solutions for the problem. Many are unsubstantiated and erroneous. In this report the authors address three conditions frequently discussed in relation to flooding problems. These are:

- 1. Have stream and river flow increased?
- 2. Has there been a climatic change that can be related to increased stream and river flow?
- 3. Has agricultural land drainage affected stream and river flow?

Changes in Flow

Discharge data from nine gaging stations were analyzed to determine if changes in flow over time have occurred. Locations are shown in Figure 1. There were three comparisons of flow with time using linear regression. This simple statistical test will tell if flow rates are increasing, decreasing or unchanged over the time period measurements have been made. These comparisons were:

1. Mean annual flow for the water year (Oct. 1 of one year through Sept. 30 of the following year) versus time in years.

Brun and Richardson are associate professors, Enz is assistant professor, Larsen is research assistant, Department of Soils.

- 2. The maximum daily flow in a given water year versus time in years.
- 3. The mean spring flow (for March, April and May) in a given water year versus time in years.

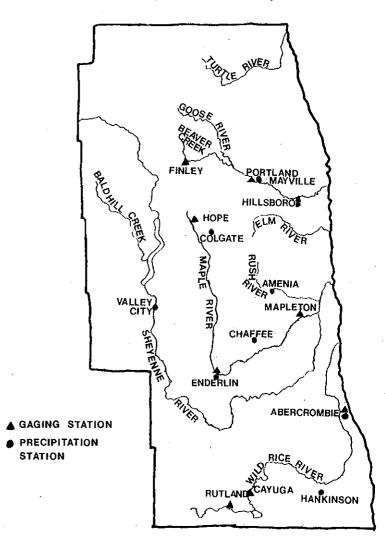


FIGURE 1. Locations of stream gaging stations and precipitation stations used in stream flow analysis.

From! North Dakota Farm Research V.38, PP. 11-14. NDSU Catalog. Periodical 630.72 N81.00 The analyses were done by indexing the first water year as 1 and incrementing each following water year by 1 through the period of record. Flow was then correlated with the indexed years for the nine gaging stations. Discharge or flow is expressed in cubic feet per second. Results are shown in Table 1.

A consistent pattern for all three comparisons emerged. At nearly all locations, the regression equations indicate that the flow rates have increased with time. They further indicate that the flows have increased faster at stations further downstream. In fact, at the last gaging station on a river the relationship between flow and time is usually statistically significant. For example, this means there is a 99 per cent probability that the mean annual flow at Hillsboro has increased with time and only a 1% probability that these data would have occurred by chance.

The headwaters of the Maple River near Hope show a negative correlation, implying flow has decreased with time. However, the Colgate precipitation data for this short time period also have a negative correlation with time (Table 3) which is the reason for this observation.

The Climate Factor

The flow analyses show flow rates have increased on a year-to-year basis except for the Maple River near Hope. The question is to determine if the increased

flows could be due to a climatic factor. To address this question two analyses were performed again, using linear regression. If it can be shown that flow rates are related to climate and also shown that the climatic factor (precipitation) has increased in a fairly regular manner over the last 20 to 40 years, a reasonable explanation would exist for the increase in flow rates.

In Table 2 there is a comparison of Mean Annual Flow with Mean Annual Precipitation (both for the water year) and Mean Spring Flow (based on March, April and May) with Winter plus Spring Precipitation (Nov. through the following May). In all cases a positive correlation exists and in many cases there is a statistically significant relationship indicating flow rates increase as precipitation increases. While Table 2 shows flow rates are related to precipitation, it still leaves much of the observed variation in flow unexplained.

Next is a comparison of Mean Annual Precipitation (for the water year) with time as shown in Table 3. At some stations comparisons were made over different time periods to correspond to the available stream flow data. For example, the precipitation data at Colgate were evaluated for three time periods corresponding to the flow data at Hope, Enderlin and Mapleton. There is no detectable pattern or change with a similar number of positive and negative correlations.

So far our analysis has shown:

1. Flow rates have increased with time.

TABLE 1. Comparison of flow rates (ft³/s) with time (water year) at nine sites in southeastern ND where r is the correlation coefficient, n the number of years and SIG the level of statistical significance.

WATER YEAR	LOCATION	EQUATION	r	n SIG.
	MEAN ANNUAL FLOW (MAF)-TIM	IE (T)		
OCT 64-SEP 65 TO OCT 77-SEP 77 OCT 56-SEP 57 TO OCT 77-SEP 78 OCT 44-SEP 45 TO OCT 74-SEP 75 OCT 59-SEP 60 TO OCT 78-SEP 79 OCT 56-SEP 57 TO OCT 78-SEP 79 OCT 32-SEP 33 TO OCT 77-SEP 78 OCT 64-SEP 65 TO OCT 78-SEP 79 OCT 39-SEP 40 TO OCT 74-SEP 75 OCT 31-SEP 32 TO OCT 78-SEP 79	MAPLE RIVER NR HOPE MAPLE RIVER NR ENDERLIN MAPLE RIVER NR MAPLETON WILD RICE RIVER NR RUTLAND WILD RICE RIVER NR CAYUGA WILD RICE RIVER NR ABERCROMBIE BEAVER CREEK NR FINLEY GOOSE RIVER NR PORTLAND GOOSE RIVER AT HILLSBORO	$\begin{array}{llllllllllllllllllllllllllllllllllll$	0.27 2 0.40 3 0.01 2	2 25% 1 2.5% 0 3 6 20% 5 6 25%
	MAXIMUM DAILY FLOW (MDF)-TIN	ИЕ (T)		
OCT 64-SEP 65 TO OCT 77-SEP 78 OCT 56-SEP 57 TO OCT 78-SEP 79 OCT 44-SEP 45 TO OCT 78-SEP 79 OCT 59-SEP 60 TO OCT 78-SEP 79 OCT 56-SEP 57 TO OCT 78-SEP 79 OCT 32-SEP 33 TO OCT 77-SEP 78 OCT 64-SEP 65 TO OCT 78-SEP 79 OCT 39-SEP 40 TO OCT 78-SEP 79 OCT 31-SEP 32 TO OCT 78-SEP 79	MAPLE RIVER NR HOPE MAPLE RIVER NR ENDERLIN MAPLE RIVER NR MAPLETON WILD RICE RIVER NR RUTLAND WILD RICE RIVER NR CAYUGA WILD RICE RIVER NR ABERCROMBIE BEAVER CREEK NR FINLEY GOOSE RIVER NR PORTLAND GOOSE RIVER AT HILLSBORO	MDF = -21.1 (T) + 33.8 MDF = 69.4 (T) + 364 MDF = 84.6 (T) + 585 MDF = 5.59 (T) + 140 MDF = 7.24 (T) + 217 MDF = 28.5 (T) + 851 MDF = -2.75 (T) + 484 MDF = 13.0 (T) + 883 MDF = 75.3 (T) + 54.2		0 3 6 20% 5 6
	MEAN SPRING FLOW (MSF)-TIMI	E (T)		·
OCT 64-SEP 65 TO OCT 77-SEP 78 OCT 56-SEP 57 TO OCT 78-SEP 79 OCT 44-SEP 45 TO OCT 74-SEP 75 OCT 59-SEP 60 TO OCT 78-SEP 79 OCT 56-SEP 57 TO OCT 78-SEP 79 OCT 32-SEP 33 TO OCT 77-SEP 78 OCT 64-SEP 65 TO OCT 78-SEP 79 OCT 39-SEP 40 TO OCT 74-SEP 75 OCT 31-SEP 32 TO OCT 78-SEP 79	MAPLE RIVER NR HOPE MAPLE RIVER NR ENDERLIN MAPLE RIVER NR MAPLETON WILD RICE RIVER NR RUTLAND WILD RICE RIVER NR CAYUGA WILD RICE RIVER NR ABERCROMBIE BEAVER CREEK NR FINLEY GOOSE RIVER NR PORTLAND GOOSE RIVER AT HILLSBORO	$\begin{array}{llll} \text{MSF} = -0.75 \ (\text{T}) + \ 15.1 \\ \text{MSF} = & 4.66 \ (\text{T}) + \ 55.1 \\ \text{MSF} = & 6.87 \ (\text{T}) + \ 86.6 \\ \text{MSF} = & 0.38 \ (\text{T}) + \ 22.4 \\ \text{MSF} = & 1.54 \ (\text{T}) + \ 33.7 \\ \text{MSF} = & 3.41 \ (\text{T}) + 120 \\ \text{MSF} = & 0.73 \ (\text{T}) + \ 30.4 \\ \text{MSF} = & 2.24 \ (\text{T}) + \ 66.6 \\ \text{MSF} = & 7.57 \ (\text{T}) + \ 42.6 \\ \end{array}$	-0.50 1 0.27 2 0.34 3 0.07 2 0.15 2 0.18 4 0.13 1 0.16 3 0.34 4	2 25% 1 10% 0 3 6 25% 5 6

2. Flow rates increase as precipitation increases.
3. There has been no significant increase or decrease in precipitation over the period in which flow rates have increased.

Land Drainage

Considerable surface drainage of agricultural land in North Dakota has occurred within the last 30 to 40 years. Water that once was held in fields, depressions and sloughs now is free to drain into streams and rivers. However, little information can be found on the magnitude of change due to drainage. To evaluate this question the natural drainage basin and the drained land in the Maple River and Goose River catchment basins above the Glacial Lake Agassiz Plain were determined. United States Geological Survey maps were used to calculate the total acreage in each catchment basin. A ground survey was conducted during the summer of 1979 to determine the acreage in the natural drainage basin and the additional acreage that now drains in the basin as a result of land drainage. These data, shown in

Table 4, indicate the current drainage basin is much greater due to land drainage.

The effects of drainage on flow rates at Enderlin and Portland were evaluated. The acreage in the natural drainage basin and the acreage in the current drainage basin were compared with the mean annual flow, the maximum daily flow and the mean spring flow obtained from the prediction equations in Table 1. In using the flow prediction equations we have assumed drainage started near the time when flow records began and has proceeded annually in a fairly uniform manner.

The regression analysis shows the increase in predicted flow is strongly related to increase in drainage area in each basin (Table 5). The analysis indicates that approximately 50 per cent of the increase in predicted mean annual flow, 36 per cent of the increase in predicted maximum daily flow, and 70 per cent of the increase in predicted mean spring flow is due to increased drainage area. In the second part of Table 5 we assumed the same proportion of land drainage upstream from Mapleton and Hillsboro as there was upstream from Enderlin and Portland, respectively. Any error in

TABLE 2. Comparison of flow rates (ft³/s) with precipitation (in) at six sites in southeastern ND where r is the correlation coefficient, n the number of years and SIG the level of statistical significance.

WATER YEAR	LOCATION	EQUATION	г	n	SIG.
	MEAN ANNUAL FLOW (MAF) - MEAN ANNUAL PRECIS	PITATION (MAP)			
OCT 64-SEP 65 TO OCT 77-SEP 78	MAPLE RIVER NR HOPE-COLGATE	MAF = 0.10 (MAP) + 1.13	0.25	14	
OCT 56-SEP 57 TO OCT 77-SEP 78	MAPLE RIVER NR ENDERLIN-ENDERLIN	MAF = 2.62 (MAP) - 17.15	0.42	22	5%
OCT 32-SEP 33 TO OCT 77-SEP 78	WILD RICE RIVER NR ABERCROMBIE-HANKINSON	MAF = 8.23 (MAP) - 91.52	0.45	46	1%
OCT 56-SEP 57 TO OCT 77-SEP 78	WILD RICE RIVER NR ABERCROMBIE-ABERCROMBIE	MAF = 8.57 (MAP) - 98.82	0.45	22	5%
OCT 39-SEP 40 TO OCT 74-SEP 75	GOOSE RIVER NR PORTLAND MAYVILLE	MAF = 3.50 (MAP) - 37.57	0.34	36	5%
OCT 32-SEP 33 TO OCT 77-SEP 78	GOOSE RIVER AT HILLSBORO HILLSBORO	MAF = 2.11 (MAP) + 26.29	0.11	41	
	MEAN SPRING FLOW (MSF) - WINTER + SPRING PREC	IPITATION (PWS)			
OCT 64-SEP 65 TO OCT 77-SEP 78	MAPLE RIVER NR HOPE COLGATE	MSF = 0.05 (PWS) + 9.06	0.01	14	
OCT 56-SEP 57 TO OCT 77-SEP 78	MAPLE RIVER NR ENDERLIN ENDERLIN	MSF = 9.01 (PWS) + 39.73	0.17	22	
OCT 32-SEP 33 TO OCT 77-SEP 78	WILD RICE RIVER NR ABERCROMBIE-HANKINSON	MSF = 26.11 (PWS) - 7.56	0.26	46	10%
OCT 56-SEP 57 TO OCT 77-SEP 78	WILD RICE RIVER NR ABERCROMBIE-ABERCROMBIE	MSF = 33.99 (PWS) - 52.61	0.30	22	20%
OCT 39-SEP 40 TO OCT 74-SEP 75	GOOSE RIVER NR PORTLAND MAYVILLE	MSF = 41.82 (PWS) - 188.51	0.65	36	1%
OCT 32-SEP 33 TO OCT 77-SEP 78	GOOSE RIVER AT HILLSBORO HILLSBORO	MSF = 52.53 (PWS) - 146.53	0.37	41	2.5%

TABLE 3. Comparison of precipitation (in) with time (water year) at nine sites in southeastern ND where r is the correlation coefficient, n the number of years and SIG the level of statistical significance.

PRECIPITATION (PPT) - TIME (T)

WATER YEAR	LOCATION	EQUATION	r	n	SIG.
OCT 64-SEP 65 TO OCT 77-SEP 78	COLGATE	PPT = -0.31 (T) + 21.14	0.30	14	25%
OCT 56-SEP 57 TO OCT 77-SEP 78	COLGATE	PPT = -0.01 (T) + 18.53	- 0.01	22	
OCT 44-SEP 45 TO OCT 77-SEP 78	COLGATE	PPT = 0.02 (T) + 17.64	0.05	35	
OCT 44-SEP 45 TO OCT 77-SEP 78	VALLEY CITY	PPT = -0.03 (T) + 19.44	- 0.08	35	
OCT 32-SEP 33 TO OCT 77-SEP 78	HILLSBORO	PPT = 0.02 (T) + 19.41	0.06	43	
OCT 63-SEP 64 TO OCT 77-SEP 78	CHAFFEE	PPT = 0.00 (T) + 20.10	0.00	15	
OCT 56-SEP 57 TO OCT 77-SEP 78	ENDERLIN	PPT = -0.11 (T) + 22.56	- 0.11	22	
OCT 39-SEP 40 TO OCT 74-SEP 75	MAYVILLE	PPT = 0.03 (T) + 18.87	0.09	36	
OCT 32-SEP 33 TO OCT 77-SEP 78	HANKINSON	PPT = 0.05 (T) + 18.83	0.14	46	
OCT 56-SEP 57 TO OCT 77-SEP 78	AMENIA	PPT = -0.02 (T) + 21.48	- 0.03	22	
OCT 50-SEP 51 TO OCT 77-SEP 78	AMENIA	PPT = 0.10 (T) + 19.13	0.17	28	
OCT 56-SEP 57 TO OCT 77-SEP 78	ABERCROMBIE	PPT = -0.10 (T) + 22.75	- 0.13	22	.

this assumption would be small since the ground survey of the drainage basins above Enderlin and Portland are a large part of the Mapleton and Hillsboro basins, respectively. The current drainage upstream from Mapleton was estimated to be 64 per cent greater than the natural drainage, while the current drainage upstream from Hillsboro was estimated to be 180 per cent greater the natural drainage. This gave even higher correlations of predicted flow to acreage than the previous case (Table 5).

TABLE 4. Acreage in Maple River and Goose River basins and changes due to land drainage.

Total Catchment	Natural Drainage	Drained Land	Total Current
Basin	Basin	Estimate	Drainage Basin
	Maple	River	·
636,000 acres	126,800 acres	80,700 acres	207,500 acres
	(19.9%)	(12.7%)	(32.6%)
	Goose	River	
609,800 acres	110,700 acres	199,000 acres	309,700 acres
	(18.2%)	(32.6%)	(50.8%)

Conclusions

Significant increases in flow on the Maple, Wild Rice and Goose Rivers have occurred over the last 30 to 40 years. Flow rates were shown to be related to climate (precipitation); however, there appears to be no change in precipitation patterns to account for the increase in flow rates. Predicted flow rates were shown to be closely related to changes in basin size due to land drainage in the Maple River and Goose River basins. It appears that

TABLE 5. Comparison of predicted flow rates (ft³/s) to natural drainage and current drainage area where r is the correlation coefficient.

Flow	Predicted flow rates for:				r
	End	nderlin Portland		land	
	Natural Drainage	Current Drainage	Natural Drainage	Current Drainage	
	126,800 acres	207,500 acres	110,700 acres	309,700 acres	
	(ft³/s)	(ft³/s)	(ft³/s)	(ft³/s)	
Mean Annual	22.36	55.12	18.21	43.06	0.72
Maximum Daily	433.4	1891	896.0	1351	0.60
Mean Spring	59.76	157.6	68.84	147.2	0.84
		ted flow rat leton		boro	
	Natural Drainage	Current Drainage	Natural Drainage	Current Drainage	
•	1.00 Welghted acres	1.64 Weighted acres	1:00 Welghted acres	2.80 Weighted acres	
	(ft³/s)	(ft³/s)	(ft³/s)	(ft³/s)	
Mean Annual	21.56	125.4	15.04	115.8	0.79

land drainage is a factor aggravating the flooding problem in eastern North Dakota; however, no attempt was made to quantify its overall significance.

3208

299.6

129.5

50.17

3528

390.8

0.86

0.93

669.6

93.47

Maximum Daily

Mean Spring

Acknowledgement

The authors express their appreciation to Mr. Russell E. Harkness, US Geological Survey, Water Resources Division, Bismarck, ND for providing computer printouts of stream flow data used in this analysis.

continued from page 9

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Fargo/Moorhead Feasibility Study Scoping Comments Bob Bezek [Bob.Bezek@dnr.state.mn.us]

Jon,

In response to the initial meeting you had in Fargo and your request for some input based on that meeting, comments were solicited from Department staff. While I did get some input back it was very general in nature. I think it would have been helpful to have a formal request to respond to. That being said, following is a summation of the comments we received.

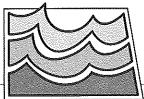
- 1. Continue to consult Natural Heritage data.
- 2. It is anticipated that a channel diversion through agriculture land will not have significant impacts to wildlife resources for production or movement. Depending on the type of vegetation and management practices employed some benefits may be realized in a diversion channel.
- 3. Levees and floodwalls along the river may effect the movement of some species of wildlife such as geese, but would not be significant in either a negative or positive way.
- 4. The employment of water retention should be included in the mix of alternatives. Opportunities exist to increase and improve ecosystem and wetland restoration, wildlife habitat and provide recreational opportunities through the use of multipurpose water retention areas.
- 5. Attached for consideration is Technical Paper 12 (Wetland Hydrology & Biodiversity in the Red River Basin, Minnesota) developed by the Red River Flood Damage Reduction Work Group.
- 6. The potential for impacts to the Buffalo Aquifer need to be addressed in the consideration of alternatives.
- 7. Many regional flood mitigation efforts are either under way or planned by groups such as the Red River Water Management Board and the Red River Basin Commission. Every effort should be made to identify all possible partners to leverage money and benefits where ever possible.
- 8. It is recommended that structural flood control measures not be utilized to promote development in currently undeveloped areas prone to flooding.

Again, these are just some initial comments. Once you compile the comments you have received from others it might help to route those to our staff as well. Thanks for the opportunity to provide input Jon.

Best Regards, Bob Bezek

Robert J. Bezek NW Regional Hydrologist MN DNR Waters - Bemidji (o) 218-308-2621

(c) 218-760-7096



North Dakota State Water Commission

900 EAST BOULEVARD AVENUE, DEPT 770 • BISMARCK, NORTH DAKOTA 58505-0850 701-328-2750 • TDD 701-328-2750 • FAX 701-328-3696 • INTERNET: http://swc.nd.gov

July 7, 2009

US Army Corps of Engineers ATTN: Craig Evans 190 East 5th St, Suite 401 St, Paul, MN 55101

Dear Mr. Evans:

The purpose of this letter is to provide some initial comments on the Fargo-Moorhead Metropolitan Area Feasibility Study. Your efforts to study permanent flood control options in the Fargo-Moorhead, and surrounding areas are an important first step in providing much-needed flood protection for that area.

As you know, the State of North Dakota, through the Water Commission, has pledged \$75 million toward the Fargo Southside Flood Control (FSFC) Project. With that in mind, I would respectfully request an expedited analysis of the FSFC Project, and its role in various alternatives. This might allow local sponsors to proceed with construction on this component as soon as possible, with the understanding that the costs would be part of the non-federal share of the overall Fargo-Moorhead Metro Area project costs.

In addition, considering the magnitude of 2009 spring flood events, and those of years past, I would also respectfully request that any flood protection alternatives developed be designed for larger events than those with a one percent chance of occurrence. As an example, the Grand Forks-East Grand Forks project was constructed to provide protection for up to a 250-year event.

Furthermore, I would encourage the Corps to develop a range of alternatives that will provide a host of options for the project area. These should include not only levee alternatives, but diversion options as well.

Once again, Fargo and Moorhead were fortunate enough to escape a record flood event this past spring. But who knows how many more times those communities can pull off the seemingly impossible. For that reason, I support your commitment to this process, and I applaud your expedited approach, as time is of the essence.

Our agency looks forward to working with the Corps in the coming months and years, with the ultimate goal of providing permanent flood control for the Fargo-Moorhead metro area. If you have any questions, please feel free to contact Randy Gjestvang in our Red River office at 701-282-2318, or email rgjestvang@nd.gov.

Sincerely,

Dale L. Frink State Engineer

DLF:pmf:ds/1955



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION 8

1595 Wynkoop Street
DENVER, CO 80202-1129
Phone 800-227-8917
http://www.epa.gov/region08

Ref: EPR-N

JUL 0 9 2009

Mr. Jonathan Sobiech US Army Corps of Engineers 190 East 5th St, Suite 401 St Paul, MN 55101\

> RE: Fargo-Moorhead Metropolitan Feasibility Study, North Dakota and Minnesota

Dear Mr. Sobiech:

Thank you for the opportunity to provide you with early scoping comments on the Fargo-Moorhead Metropolitan Feasibility Study. This project, which is a cooperative effort between the communities of Fargo and Moorhead with the U.S. Army Corps of Engineers (USACE), will address the high risk of flood damage to urban infrastructure from the Red River of the North, the Wild Rice River, the Buffalo River, and the Sheyenne River. In addition, the project will address opportunities for ecological and wildlife habitat restoration in these watersheds.

Since this project spans two EPA regional offices, we have coordinated with Region 5 and together we have determined that Region 8 will remain the project lead. EPA Region 8 is very interested in the proposed project and in becoming a cooperating agency for the eventual Environmental Impact Statement (EIS). Several sections of EPA Region 8 will be involved in reviewing the project information, including water quality, watershed, and Clean Water Act 404 permits.

Our overriding concern about scoping for this project has been that the study goals and planning objectives appear to be inextricably linked with the Fargo-Southside Flood Control Project. However, the Federal Emergency Management Agency (FEMA) recently determined that they will no longer be developing an EIS for the larger Fargo-Southside project. Rather, they will do an Environmental Assessment for a discrete part of that larger project which includes only Drain 27 and 53. EPA believes that this will lead to better alternatives development for the Fargo-Metrowide Feasibility Study to address a regional system for flood risk reduction.

Our specific comments for scoping are enclosed. Thank you for the opportunity to comment. If you have any questions, please contact me at (303) 312-6004 or you may also contact the project lead, Robin Coursen, at (303) 312-6695.

Sincerely,

Larry Syoboda, Director

NEPA Program

Ecosystems Protection and Remediation

Enclosure

Cc: Brent Truskowski, EPR-W

Fargo-Moorhead Feasibility Study EPA Pre-Scoping Comments

Purpose and Need:

The purpose and need statement for this project should clearly describe the current "problem" (flooding), and further, the future problems that will result if the project this not implemented (impacts to the riverine ecology, riparian habitat, wetlands, agricultural impacts, economic impacts, health and safety, etc.). EPA recommends that the signatories to the MOU for this project have an opportunity to comments on "purpose and need" prior to alternatives development.

Alternatives:

An alternative analysis that rigorously explores a range of options as well as a combination of options for addressing flooding should be developed. This should include, but not be limited to alternatives that examine watershed-wide or diffuse storage (Waffle approach), enlarging floodways through land use as well as levee and channel diversions. We also encourage you to examine non-structural approaches that restore natural floodplain connectivity, including the enhancement or creation of wetlands and other flood reduction techniques based on fluvial geomorphic principles. Such techniques could include restoration of natural channel dimensions, planform and gradient.

The current land use planning and floodway zoning for Fargo and Moorhead should be disclosed in this study. Growth and redevelopment planning for the region should also be examined and included in these alternatives. Such planning could reduce the cost of flood protection, protect floodways and minimize flood damage. For example, evaluate where there are opportunities for cluster development that would reduce infrastructure costs and preserve open space and floodways.

Finally, the criteria for describing impacts and ranking these alternatives should be comprehensive and clearly described.

Indirect Effects:

The indirect effects analysis should address the growth-inducing effects of the project related to changes in the pattern of land use (including impacts on prime farmland and other agricultural lands), and population density. Changes in land use patterns should disclose local land use policies for Fargo and Moorhead related to residential and commercial building in or near floodways.

Red River Basin Collaboration:

We acknowledge your representation on the International Joint Commission Red River Board and we recommend that the USACE assure on-going collaboration with the following organizations regarding river basin flood issues and any trans-boundary environmental concerns.

Red River Basin Commission: Lance Yohe, Director http://www.redriverbasincommission.org/

International Water Institute: Chuck Fritz, Director http://www.internationalwaterinstitute.org/

Climate Change Data:

EPA recommends that the affects of climate change on future flooding be incorporated into the analysis for this study. For your information, a recently released report from John Holdren, President Obama's Director of Science and Technology Policy highlights new information regarding climate change stress on water resources in the west. Thirteen science based agencies participated in development of this report. EPA recommends that the USACE consider this report, among other, in the feasibility study for this project. See http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts.

From: Davidson, Mark D MVP

Sent: Saturday, April 18, 2009 11:45 AM

To: 'michael fitzpatrick'
Subject: RE: Busy now

Mike,

I have passed your e-mail onto the 2 Fargo-Moorhead Metro Feasibility Study project managers. Thanks!

Mark

```
----Original Message----
```

From: michael fitzpatrick [mailto:fitzrite@msn.com]

Sent: Friday, April 17, 2009 7:59 PM

To: Davidson, Mark D MVP Subject: RE: Busy now

Mark,

Thanks for getting back. I am thinking of a system of 2 or 3 overflow canals, dug to the overflow level of the river, which would carry extra water away from the river to a deep pit which is then pumped out and the water used for productive uses over the course of the summer and fall so that it is empty for the following spring. I would suggest or reccomend using solar powered pumps. The goal being to conserve some of that extra water which is going to be a valuable resource and relieve the flooding. If you get a free minute or if the project manager gets a free minute, please let me know what you think. I have seen where there are some federal grants to work with for projects like this.

Mike

```
> Subject: Busy now
> Date: Fri, 17 Apr 2009 10:51:44 -0500
> From: Mark.D.Davidson@usace.army.mil
> To: fitzrite@msn.com
>
> Mike - right now we are very busy with the flood fight.
> I wouldn't be able to talk to you for a few weeks.
>
> If you write down your ideas concerning the flooding in the Red River
> area I will pass them on to the project manager for the Fargo-Moorhead
> flood study.
> Thanks!
> 
> Mark
> 
> ----Original Message----
> From: michael fitzpatrick [mailto:fitzrite@msn.com]
> Sent: Friday, April 17, 2009 8:40 AM
> To: Davidson, Mark D MVP
```

```
> Subject:
>
> Dear Mr Davidson,
> My name is Michael Fitzpatrick and I live in Saint Paul. I have an
> idea to propose and discuss regarding the flooding of the Red River.
> Is it possible to discuss this over the phone or only via email?
Please respond.
> Thankyou.
> Mike
>
```

From: Awsumb, Lance G MVP

Sent: Tuesday, May 26, 2009 3:41 PM

To: Snyder, Aaron M MVP; Evans, Craig O MVP; Bluhm, Kevin W MVP;

McGrath, Jeffrey L MVP

Subject: FW: Cost/benefit breakdown

Guys,

I spoke with the gentleman who sent the below email and told him I could forward his question to the right person. I don't know how much information I can give him, so I have not responded. I think maybe this should go with the formal comments, as well. If you would like me to respond, let me know.

Thanks.

Lance

----Original Message----

From: Roger Koppang [mailto:koppang@cord.edu]

Sent: Wednesday, May 20, 2009 11:50 PM

To: Awsumb, Lance G MVP

Subject: Cost/benefit breakdown

Lance,

I attended the community meeting tonight presented by your group, the U.S. Army Corps of Engineers (St Paul District), at the Hansen Theater at Moorhead State University Moorhead. Just before leaving, I asked you a question concerning the breakdown of damages in the event of 2 catastrophic flood levels in the Fargo/Moorhead community. One level, the "100 year flood", had estimated worst case scenario costs of \$2.2 billion. The second scenario, a "500 year flood", had estimated worst case damages of \$6.5 billion.

My question: Is there a breakdown of those damages for Moorhead versus Fargo, or Minnesota communities versus North Dakota communities? The 500 year flood scenario seemed to indicate significant damage estimates even in West Fargo, for instance. Also, are there cost breakdowns on a per capita basis for the various local and/or state governmental entities involved under the two scenarios? The damage estimates for a 100 year flood seemed to indicate much more affected developed acreage in North Dakota versus Minnesota. The disparity seemed to grow under the 500 year flood scenario.

In the event a large scale flood prevention/flood control project goes forth, would these same damage estimates (which could also be viewed as potential benefits) breakdowns, presented in a ratio format, be used in determining the amount of dollars an individual local government is responsible for, once that project has an estimated price tag? It seems

the benefits gained should determine the costs to a community.

Before I left you tonight, I mentioned my questions could be considered "divisive", yet in reality there are 2 very different communities significantly involved in this process. Those 2 communities are in 2 different states, with two different sets of prevailing economic conditions, and most likely 2 very different methods of funding any local share of a joint project.

Your groups presentation was very thorough and informative. I look forward to the next one. For what it's worth, I drew out the Diversion option during a lull in this year's flood battle. My drawing seems to closely mimic your group's diverson option. My plan had estimated land acquistion costs of \$25-\$30 million. It began down by Rustad, MN, and re-entered the Red River channel north of Kragness, MN. The only real obstacle in my plan was the Moohead airport. I guess another not so obvious, but still very significant obstacle might be the Buffalo River Aquifer. My point in telling you this is not to portray myself as a forward thinking, visionary individual, but rather to illustrate my belief that a diversion canal on the Minnesota side of the Red River seems so straight forward, so logical, so doable, so obvious. I also do acknowledge there's much more than basic land acquistion in a project of this scope, but the attraction of such a concept is the notion of making every flood a smaller flood, and even possibly making the truly epic floods manageable.

Thanks for your time and your efforts.

Roger Koppang 629 Maple Lane Moorhead, MN 56560

From: Miller, D Les NWP

Sent: Wednesday, May 20, 2009 12:25 PM

To: Evans, Craig O MVP

Subject: Flood Protection Plans - Fargo-Moorhead - Temporary Plans Also

Follow Up Flag: Follow up

Due By: Monday, May 25, 2009 10:00 AM

Flag Status: Flagged

d.les.miller@usace.army.mil

Hi Craig,

When I read the article below I was wondering about the following:

- Is there a temporary flood fight design and plan which is being replaced by the permanent flood damage reduction considerations described in the article?
- Is there a flood hazard mitigation project listed in one or both communities and/or their respective county's hazard mitigation plan for floods?

Thanks,

Les

D. Leslie Miller, P.E. (Les)
Flood Preparedness Program Manager
U.S. Army Corps of Engineers, Portland District Readiness Branch (CENWP-OD-E)
333 SW First Avenue
Portland, OR 97204-3495
Office: 503-808-4400
FAX: 503-808-4405

US Army Corps of Engineers unveils flood protection plans By Helmut Schmidt The Forum, Fargo, N.D. May 20, 2009

Fargo-Moorhead residents got their first shot Tuesday at brainstorming solutions for permanent flood protection.

About 75 residents and several dozen local officials heard the U.S. Army Corps of Engineers unveil two possibilities for flood control: a \$909 million, 30-mile Red River diversion channel; and \$625 million in levees along the Red River in the metro.

The levee plan includes Fargo's \$161 million Southside Flood Control Project.

"The time for new ideas is right now," said project co-director Craig Evans, speaking during a two-hour informational and comment-gathering session at Fargo's downtown Centennial Hall.

"Maybe somebody out there has a nugget we haven't thought of," $\mbox{\sc Evans}$ said.

Evans said annual flood damage in Fargo-Moorhead averages \$64 million.

But costs could leap if there is a catastrophic failure of flood protection. Such a failure would cost the area about \$2.1 billion in a 100-year-flood, \$5 billion in a 250-year flood and \$6.5 billion in a 500-year flood, corps figures show.

The Red River at Fargo has exceeded flood stage in 51 of the past 107 years, and every year from 1993 through 2009, a corps report said.

That means the odds of having a Red River flood greater than the 2009 flood are one in five for someone who takes out a 30-year mortgage, the corps estimates.

The aim of the study is to get "the highest level of protection we can justify," Evans said, whether that's 50-year or 500-year flood protection.

If Congress authorizes the corps to build a project, the federal government would pay 65 percent of the costs, with the remainder picked up by local governments.

The diversion plan being studied is the shortest route and likely the least expensive, running through Minnesota from the confluence of the Wild Rice and Red rivers south of Fargo, north to a point northwest of Kragnes, according to the speakers and a corps report.

The diversion would be a massive project involving 17 highway and four railway bridges, Evans said. It would be 20 feet deep and 500 feet wide across the bottom, requiring 2,000 feet of right of way along its path to handle the dredged earth.

Other diversions in North Dakota and Minnesota will also be studied.

Kevin Bluhm, a corps spokesman, said the alternatives will be more fully worked up in the next four months with a cost-benefit analysis. Then the corps will return to the area in September or October to gather more input.

A corps timetable has the study finalized by September 2010, and sent to Congress by that December. April 2012 would be the earliest work would start, Bluhm and Evans said.

Completion of the project will depend on how quickly funding is provided by Congress.

Julie Olson, a resident of Maple Prairie, a subdivision south of Fargo on the Red River, said she knows the more global project will take time. In the meantime, she hopes Southside Flood Control moves ahead.

"It's a huge process. It's not going to happen overnight," she said.

As part of the study, the corps will test soil in the area this summer, Bluhm said.

South Fargo resident Eric Bach said he thought the corps plan was "pretty preliminary ... but it's good to get it out in public."

Jerry Baldwin worries his home on Fargo's Southwood Drive may be sought for a buyout, but he hopes the corps can find "a long-term solution for the area."

Fargo City Engineer Mark Bittner said the corps' plans were not a big surprise, but he said costs were lower than expected.

"Seems to me there's a positive cost-benefit, which is good," Bittner said.

Bill Neuhauser P.E. 21494 Coaley Bay drive Detroit Lakes, MN 218-847-9718

Craig Evans
U.S. Army Corps of Engineers

You have ask for other options to getting the water around Fargo/Moorhead, the way I looked at this is that there are three ways to get water around an object. One is to divert it around with a diversion, which can be very expensive with land acquisitions and bridge and road constructions and not too mention very time consuming. Second is to go through town with large flood walls: This has similar disadvantages as the diversion mostly the cost. And then the third method I'm going to propose to you.

The third method is not necessary a new method, in fact it has been used in numerous places around the world to solve issues similar to ours. The cost for this is the big question that will probably involve asking contractors for their input. I have found instances for this method being use or being proposed to be used in cities like Bangkok, Cincinnati and Seattle.

The job at hand is not necessary to divert all of the flows of the Red River around the FM area, but instead an amount the will drop the flows through town to a manageable height.

Looking at the graphs from the 2009 flood the flows at the high pt were around 31k at the 40.82. There are two questions that need to be answered here? Just what is the flow that the Corps wants to design for? And what gauge height would be acceptable to flow though the city?

What I'm proposing is a series of tunnels under the city. Now before you stop reading think about the cost advantages to this. Very small land and ROW acquisition is required, none or very little road and bridge building would be required and the current soils under Fargo/Moorhead are glacier till which we all know is very soft and very easy to bore though. All three of the links below are for tunnels and all but one are though granite! Meaning very expensive! The real challenge to this is finding a path under the city that would miss any existing pilings. My first thought was to tunnel under the interstate but when I thought of the pilings this wouldn't work.

My preliminary design calls out for about 80,000 ft of tunnels and with three 30ft dia tunnels this would get us about 15k of flow. This is assuming a 15ft drop from the

upstream to down stream. Large pumps would probably need to be added to this design but this 15k number is assuming gravity flow. We would dig down at a slope to 70 or 80 ft deep and then hold the bottom of the tunnel until the north end of the city and which time we would then let the water percolate or pump back up to the surface. Don't hold me to these numbers the software I used to calc this is not design to calculate tunnel flows but culverts.

You ask for other solutions, well this is thinking outside the box! We could call it the FM tube!

Thanks for your time Bill Neuhauser P.E. 21494 Coaley Bay Dr. Detroit Lakes, MN 56501

http://www.ita-

 $\underline{aites.org/cms/fileadmin/filemounts/general/pdf/ItaAssociation/Organisation/Members/MemberNations/Thailand/U-1BMA.pdf}$

http://www.enquirer.com/editions/2001/08/12/loc_the_big_drain_giant.html

http://www.discovery.org/a/8231

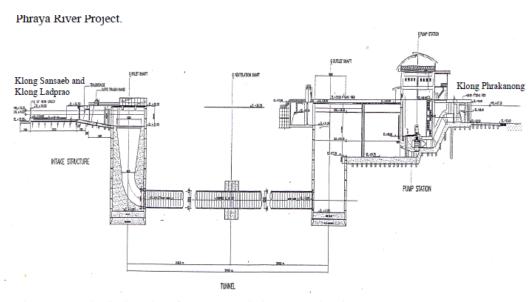


Figure 2. Longitudinal section of BMA water drainage tunnel project.

From: Evans, Craig O MVP

Sent: Saturday, June 06, 2009 11:50 AM

To: 'billneu@arvig.net'

Cc: Snyder, Aaron M MVP; Schmit, Thomas A MVP Subject: RE: Alternative flood protection idea for Fargo

Attachments: FM Flood alternative.doc



Mr. Neuhauser,

Thank you for the suggestion and information on the innovative tunnels. There is a similar system in San Antonio, Texas that we are aware of. We really appreciate every new idea, and it will be considered. As we continue our study, we would like the public to be involved as much as possible.

For more information on the study:

We have a project information paper posted on our Website: http://www.mvp.usace.army.mil/fl_damage_reduct/default.asp?pageid=1455

We also have a project Website where we'll post our slides and handouts from the public meetings:

http://www.internationalwaterinstitute.org/feasibility/index.htm

Thanks again for your interest and ideas,

Craig Evans

Senior Planner & Project Manager

St. Paul District

U.S. Army Corps of Engineers

Office: (651) 290-5594 Mobile: (612) 518-3413

e-mail: craig.o.evans@usace.army.mil

----Original Message----

From: bill neuhauser [mailto:billneu@arvig.net]

Sent: Wednesday, May 20, 2009 9:21 AM

To: Evans, Craig O MVP; Snyder, Aaron M MVP

Subject: Alternative flood protection idea for Fargo

Please see attached doc.

Bill Neuhauser P.E.

From: Evans, Craig O MVP

Sent: Monday, June 08, 2009 9:42 AM

To: 'jay'

Cc: Snyder, Aaron M MVP; Schmit, Thomas A MVP

Subject: RE: Please Pass these comments on at the Flood meetings

Mr. Sandt,

We are considering all possible alternatives, and I did not mean to imply that we wouldn't consider your suggestions. I just wanted to point out that the Corps has limited authorities, and it seemed more appropriate to me that your issues be addressed through the political process than through our techincal study.

The Corps has no position on your first suggestion to set up a new Water Commission Board. If such a board is established, we will be happy to work with it, but we have no role in that political issue.

We are looking at flood storage in another feasibility study, the Fargo-Moorhead and Upstream study that began in 2004. We are also aware of the EERC's "waffle plan" study that seems very similar to your #2 suggestion. Because those concepts would need to be implemented across the entire basin, they are geographically out of our Fargo-Moorhead Metro study scope. Initial work has shown us that it will be difficult to find economic justification for the type of storage you suggest, and the model of storing water temporarily on farmed land does not fit our existing authorities to build permanent Federal projects. These types of projects are more likely to be built and managed by a local watershed district or county drainage authority.

Your third suggestion is for local action to prepare for flood-fighting. Again, this is not a Corps responsibility. We can provide assistance during floods, but we do not provide equipment for each community to store and maintain.

Thanks, again, for your interest in this study.

Craig Evans

Senior Planner & Project Manager

St. Paul District

U.S. Army Corps of Engineers

Office: (651) 290-5594 Mobile: (612) 518-3413

e-mail: craig.o.evans@usace.army.mil

----Original Message----

From: jay [mailto:jay@iconcmo.com] Sent: Monday, June 08, 2009 8:38 AM

To: Evans, Craig O MVP

Cc: Snyder, Aaron M MVP; Schmit, Thomas A MVP

Subject: Re: Please Pass these comments on at the Flood meetings

Dear Craiq:

I am confused as to the answer provided. The first statement says that they will be considered in the study process then the next statement says they are beyond the scope of the study. The second statement I disagree with because the Army Corp of Engineers should be taking all the viable options that are available to limit the following: widen the river, dams, diversions, holding areas, etc. Having water gates in the area that are controlled would act as a holding area which I believe is one of the options currently on the table or at least been brought up by local leaders. While these items can be passed on to legislature, an opinion from the Corp does speak louder than one citizen which has already advised the local authorities of these options.

Secondly, any study that is done that is costing millions of dollars should look at every alternative that might be feasible. Correct me if I am wrong but normally there is an initial study which sort of separates the best options from the rest of the pack. Then a second study is done on those very best options to find out what would be the best solution. Not looking at all the options on the first pass through and dismissing them as "beyond the scope" is saying that they don't even get looked at in the first round to be disqualified with a viable reason. It would be a different story if the initial view of the mentioned options were not feasible, but to not even look at them is ignoring a possible solution that would work by itself or in conjunction with others. In addition, it is proven that holding water onto farming fields does decrease flooding which is the goal overall. If anything can decrease flooding it should be looked at and not dismissed because it is out of scope. Thank you.

Jason Sandt

Evans, Craig O MVP wrote:

Mr. Sandt,

Thank you for sending us your suggestions. We will consider them in our $% \left(1\right) =\left(1\right) +\left(1\right) =\left(1\right) +\left(1\right) +\left($

study process.

All three issues you raised appear to be beyond the scope of our study. $\ensuremath{\mathsf{I}}$

encourage you to share your ideas with your local and state $\operatorname{political}$

representatives who may be able to influence those issues.

For more information on the study:

We have a project information paper posted on our Website: http://www.mvp.usace.army.mil/fl_damage_reduct/default.asp?pageid= 1455

We also have a project Website where we'll post our slides and handouts from

the public meetings:

http://www.internationalwaterinstitute.org/feasibility/index.htm

Thanks again for your interest and ideas,

Craig Evans

Senior Planner & Project Manager

St. Paul District

U.S. Army Corps of Engineers

Office: (651) 290-5594 Mobile: (612) 518-3413

e-mail: craig.o.evans@usace.army.mil

From: jay [mailto:jay@iconcmo.com]
Sent: Wednesday, May 20, 2009 4:20 PM

To: Engineering Proxy

Subject: Please Pass these comments on at the Flood meetings

To all City Leaders and Other Government Officials: City of Moorhead City of Fargo Army Corp of Engineers State of MN

State of MN State of ND

There are 3 issues that should be addressed out side of the proposed

solutions that the Corp has suggested. These suggestions would take less time

to implement and money until the future project is in place several years

down the road.

1. Development of a Water Commission Board that has the authority to

drain fields and outer areas when it is appropriate to decrease flooding and

keep river levels under control. Water run off does increase the river levels $% \left(1\right) =\left(1\right) \left(1\right) +\left(1\right) \left(1\right) \left(1\right) +\left(1\right) \left(1\right) \left$

and should be addressed just like in other states by a Water Commission that $\,$

has the authority to supervise the drainage from fields. Run off water is

 $\,$ more of a threat in level areas like FM than other areas across the USA $\,$

because everything just sits around until spring.

2. The next thing goes in hand with the above item. All fields should

have gates on them that can be controlled by the Water Board and

fines should

be imposed for anyone that is tampering with those gates or digging ditches

to drain their fields. Although I can respect the farmers ambition to get

into the fields in spring this does not justify ruining other people's

property to do it.

3. The next item is to have the water tubes that were used in the flood $\ensuremath{\mathsf{I}}$

this year for a few homes on hand in various sizes within the city storage

facilities. There is a company that does this and the cities can contract

with them. The company even guarantees that the system will work.

The reason I am emailing this is because I can not attend in person to bring $% \left(1\right) =\left(1\right) +\left(1\right$

these issue forward but I would welcome your input or any questions on my

comments here. I would like to know any feedback from these suggestions and

what the agencies do with these comments. Thank you.

Jason Sandt 701-866-1388

--

Thank you for contacting Icon Systems Jay - Icon

Phone 1-800-596-4266

Fax 218-236-0235

Company Website: http://www.iconcmo.com

http://churchsoftware.blogspot.com/2007_11_14_archive.html

From: Evans, Craig O MVP

Sent: Saturday, June 06, 2009 11:36 AM 'able.management@yahoo.com'

Cc:Snyder, Aaron M MVP; Schmit, Thomas A MVPSubject:RE: Fargo-Moorhead flood mitigation public input

Mr. Tweeten,

Thank you for your suggestions and very valuable information. We will consider your input in our study process. Water storage is currently being studied in our ongoing Fargo-Moorhead Upstream Feasibility Study. For the Metro study, we are considering storage as a supplement to other flood mitigation measures. With the topography of the land being as flat as it is, it would difficult for storage to be a stand alone alternative. As we continue our study, we would like the public to be involved as much as possible.

For more information on the study:

We have project information papers posted on our Website:

Metro study:

http://www.mvp.usace.army.mil/fl_damage_reduct/default.asp?pageid=1455

Upstream study:

http://www.mvp.usace.army.mil/fl_damage_reduct/default.asp?pageid=907

We also have a project Website where we'll post our slides and handouts from the public meetings:

http://www.internationalwaterinstitute.org/feasibility/index.htm

Thanks again for your interest and ideas,

Craig Evans

Senior Planner & Project Manager

St. Paul District

U.S. Army Corps of Engineers

Office: (651) 290-5594 Mobile: (612) 518-3413

e-mail: craig.o.evans@usace.army.mil

---- Original Message -----

From: Joel at Able Executive Management Services

<able .management@yahoo.com>
To: Bluhm, Kevin W MVP

Sent: Wed May 20 10:16:35 2009

Subject: Fargo-Moorhead flood mitigation public input

Here is my suggestion for the Corps' efforts to control flooding of the

Red River of the North around Fargo.

Build successive weir pools upstream of affected areas. In low-flow periods the basin of the pools will be native grasses used by ground nesting birds and other wildlife. After their establishment they'll be valued as a hunting resource.

Underlying the increase in flood damage is the loss of natural wetlands through current farming practices. Efforts to make low lying fields productive by tiling to the network of drainage ditches leading to the river exacerbates this.

While the acquisition of larger tracts may be required, there are advantages to the construction of successive weir pools over building a diversion

channel: (1) Acquisition of the land is less complicated than the need for a continuous channel. The problem in acquiring the rights of way for a channel is that one landowner may resist and hold up the entire project. The specific placement of a given weir pool need not be dictated by a single landowner. This should lead to a lower price per acre. It will lead to lower legal bills and less time in court, too. (2) The solution is closer to the natural stream cycle. While it does not restore the watershed to its native state, the creation of grassland flood zones emulates the natural model. (3) Cost of the weirs is offset by reduced disruption of highway and railroad bridges required of the channel (4) Introduction of this environmental plan may coincide with other economic and commercial interests. Specifically, the location of waste disposal. Determination of landfill sites would articulate nicely with the engineering required of such a project.

Thank you for the opportunity to be included in the participation process.

Joel Tweeten 2641 Vernon Avenue South St. Louis Park MN 55416 952-393-2193

From: Evans, Craig O MVP

Sent: Thursday, May 21, 2009 11:33 AM

To: 'thomas.linnertz@sba.gov'
Cc: Snyder, Aaron M MVP
Subject: Re: Fargo Flood control

Attachments: image001.gif



image001.gif

Tom,

Thanks for your suggestions. We intend to look at alternatives like the ones you mention, and I'll pass your e-mail on to our team.

We will also be looking for other ways to reduce the flood risk in your area, and some buyouts may be possible under a non-structural plan. We won't know for several months.

Please feel free to contact me any time if you have more thoughts on our study.

Thanks, Craig Evans Senior Planner St. Paul District USACE 651-290-5594

From: Linnertz, Thomas J. To: Evans, Craig O MVP Cc: Tom Linnertz (H)

Sent: Thu May 21 09:53:20 2009 Subject: Fargo Flood control

Craig:

J

I am sorry I was unable to attend the flood control meeting in Fargo on Tuesday due to conflicts in scheduling. I have read the story in the paper. I Live in the Lakshure Develoment approximately 2 miles south of Harwood. The flood control mentions nothing about the area of the Sheyenne River from the egress of the West Fargo Diversion to the Red River. This area floods terribly. This area also remained in flood

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stage for somewhere around 3 weeks after the flood was declared over in Fargo.

This Sheyenne River area needs also to be addressed or the properties purchased and the same made into a flood way. The situation continues to worsen as more efficient methods of field drainage and drain tile are installed.

I have two suggestions

- 1. Run the Red River Diversion around the west side of West Fargo, to include the Red, Wild Rice Sheyenne. Continue the same to confluence of the Red and Sheyenne. I am quite sure this suggestion would be very expensive and possibly meet with tremendous rejection from anyone in the Sheyenne basin area around West Fargo and Harwood. I believe this may have been discussed before and it was determined not economically feasible.
- 2. Create the Red River Diversion as per the meeting, and create an extension of the West Fargo Diversion utilizing what I believe is called drain 41. this would then run from the egress of the West Fargo Diversion, across/under co Rd 17, roughly diagonal to Drain 41 some where between 12th Ave and Co Rd 19 and west of 57th st N., through Lakeshure Addition and under I-29 just south of Harwood. I am just a lay person but when looking at this on Google Earth it appears to be an almost natural drain way or possibly and earlier channel of the Sheyenne River. This would involve buyout of possibly only the a few homes close the egress of the present West Fargo Diversion and then protection or buyout of the homes at Lakeshure Addition. I live in Lakeshure Addition properly handled this could become quite a effective drain way. Also, while I like my house, I am not so enamored with it that I would not take a fair market buyout.

Please don't hesitate to contact me if you have any questions. Cell 701-793-7312

Tom Linnertz

Senior Business Development Specialist

North Dakota District Office, SBA (NDDO)

U.S. Small Business Administration (SBA)

 $657\ 2nd\ Ave\ N,\ Suite\ 218,\ PO\ Box\ 3086$

Fargo, North Dakota 58108

Ph 701-239-5131 x 215

Fax 202-481-5852

Email: Thomas.Linnertz@sba.gov

Web: www.sba.gov/nd

From: Vaa, Galen [Galen.Vaa@courts.state.mn.us]

Sent: Friday, May 22, 2009 1:08 PM
To: Snyder, Aaron M MVP

Subject: Fargo/Moorhead regional flood study

Dear Mr. Snyder:

I attended your presentation concerning the above subject matter at MSUM on Wednesday. You and your colleagues should be commended for a very fine review of this complicated issue. I have talked to a number of my neighbors (I live in Crestwood subdivision, exactly 3.3 linear miles south of I-94 on the Minnesota side of the Red River) and they all were impressed with your unbiased and fair presentation of the findings and possible solutions. However, I have two concerns.

My first concern in personal in nature. Unfortunately, my home was substantially damaged this spring and it is situated in the 100 year flood plain. Thus, I have applied for a FEMA buyout and the officer from Clay County who is handling this matter has informed me that my chances for a buyout look pretty good at this time. But, I have a "what if" question concerning this matter, based upon a comment you made at the Wednesday meeting at MSUM. "What if" your organization ultimately recommends that the proposed levee alternate should be implemented and not the diversion alternative. If that is the case, I am wondering if it would be possible for someone from the Corps to roughly estimate where this levee would be located in relationship to Crestwood Subdivision where my home is located. I looked at the diagram the Corps had prepared for the "levee" alternative and it appeared that the levee would be located either on the road which forms the eastern boundary of Crestwood Subdivision, or, would be located even a short distance east of the road.

Basically, I don't want my possibility of getting a buyout jeopardized by misinformation concerning the "potential" location of this "possible" levee. As you are aware, property that is bought out by FEMA usually cannot be used for any purpose, even flood prevention purposes. My home and lot are located directly next to the Red River. My lot is about 250 feet deep and my house is about 150 feet from the river bank and the west side of the house is about 50 feet from the established floodway. When I purchased the property in 1985, the lot was 300 feet deep, but erosion and slumping has consumed about the west 50 feet. I am assuming that even if a levee is ultimately built in accordance with a future Corps recommendation, that said levee would not be built that close to the river. One of the reasons for FEMA's consideration of a buyout of my property is the fact that backyard is subject to erosion

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and slumping and is unstable.

Could someone from the Corps confirm that any future levee, if it is recommended and ultimately built, would be built on the township road that presently serves Crestwood or east of the road, and not close to the river across my present lot; thus, the officials at Clay County would not have to worry that a FEMA buyout for my house/lot might frustrate future plans to build a levee in the area? Again, I reside in Lot 11 of Crestwood Subdivision, which is located on the Red River (Minnesota side) just 1/3 mile south of the convent bride road (60th St. South in Moorhead), and at a latitude equivalent to 55th Ave South on the Fargo side of the river.

My second concern relates to the hydrology graph which the Corps has prepared that was shown at the MSUM meeting, which estimates the "peak flow" of the Red for various past flood events. This graph shows that the 2009 flood had a peak flow slightly higher than the 1897 flood. I believe that this is misleading to the public and contributes to the public perception that we have survived the worst flood event of recorded history and we therefore don't have to worry so much in the future.

Years ago, I was on the governing Board of the Clay County Historical Society. I have always enjoyed an interest in the history of the settlement of this region and the study of historic flood events that helped shape that history. The Clay County museum has some very specific historical records relating to the 1897 flood, which establish that the 40.3 foot crest occurred notwithstanding the fact that the width of the river at the Veterans Memorial Bridge in downtown Fargo extended from Broadway Avenue in Fargo on the west, and east to 8th Street in Moorhead, a distance of about a mile. The crest at the same VMB in 2009 of 40.82 feet involved a river whose width had been constricted to less than ¼ mile by the erection of dikes. Certainly, the "peak flow" of the Red in 1897 was significantly in excess of the "peak flow" in 2009, in light of the tremendous width of the Red in 1897, compared to 2009.

Also, a close friend of mine (Jay Leitch) who is a Moorhead resident, has written an authoritative book on the Red River entitled "A River Runs North". This book discusses the truly historic flood of 1826, in which the undiked Red River likely obtained a crest of at least 42.5 feet (and perhaps more) in Fargo. If you are ever in Winnipeg, you should visit "The Forks" area, which is a museum located at the confluence of the Red and Assiniboine in downtown Winnipeg. That region was settled in 1826, and accurate flood records show that the crest in that year was fully 9.1 meters (10 feet) higher than the next highest crest. It is a truly sobering exhibit for anyone living in the Red

River Basin!!

In light of the above, I suggest that you include in your presentation the fact that the 2009 flood is NOT the highest flood in Fargo in recorded history, according to historical documents. I believe that this information will instill a greater feeling in the local population and our local officials that something major needs to be done to prevent a real disaster if a flood similar to 1897 or 1826 should revisit this area.

Thank you for your consideration of the above. I look forward to hearing back from you concerning my first concern.

Galen J. Vaa

6273 -7th St. SW

Moorhead, MN, 56560

From: Vaa, Galen [Galen.Vaa@courts.state.mn.us]

Sent: Thursday, May 28, 2009 8:19 AM

To: Snyder, Aaron M MVP

Subject: Fargo/Moorhead Regional Flood Study

Dear Mr. Snyder:

Unfortunately, my email to you dated May 22, 2009 contains a typographical error. The reference to the great flood in Winnipeg in 1826, refers to a crest of fully 9.1 meters (10) feet higher than any other recorded crest. Actually, the record crest in Winnipeg in 1826 was 3.1 meters (10) feet higher than the next highest crest according to their historical records.

I look forward to your response to my email of May 22nd. Thank you.

Galen J. Vaa

From: Evans, Craig O MVP

Sent: Saturday, June 06, 2009 11:40 AM

To: 'lskeller@cableone.net'

Cc: Snyder, Aaron M MVP; Schmit, Thomas A MVP Subject: RE: Flood control idea for Red River Valley

Mr. Keller,

Thank you for your suggestions and very valuable information. We will consider them in our study process. At our public meetings on May 19th and 20th, we tried to stress there is no plan that is a silver bullet; multiple alternatives could be implemented together to make the best plan. As we continue our study, we would like the public to be involved as much as possible.

For more information on the study:

We have a project information paper posted on our Website: http://www.mvp.usace.army.mil/fl_damage_reduct/default.asp?pageid=1455

We also have a project Website where we'll post our slides and handouts from the public meetings:

http://www.internationalwaterinstitute.org/feasibility/index.htm

Thanks again for your interest and ideas,

Craig Evans

Senior Planner & Project Manager

St. Paul District

U.S. Army Corps of Engineers

Office: (651) 290-5594 Mobile: (612) 518-3413

e-mail: craig.o.evans@usace.army.mil

----Original Message----

From: Lon Shelley CableOne [mailto:lskeller@cableone.net]

Sent: Monday, May 25, 2009 4:22 PM

To: Evans, Craig O MVP

Subject: Flood control idea for Red River Valley

Craig,

The latest idea I've been hearing about involves creating a large diversion channel around F-M on the Minnesota side. While I do feel this option will provide a permanent solution for residents of the F-M metro, I fear it will cause additional issues for residents downstream. For an example, research the recent events for residents living north of Winnipeg. There were several news reports of people becoming overwhelmed with the rapidly moving water coming from the Red and the diversion.

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Due to the topography of the land, I feel permanent flood protection must include multiple solutions. In conjunction with a diversion channel to protect the major metropolitan areas, I'd like to see a series of large holding ponds up and down the river, both in North Dakota and Minnesota. I feel the best way to control flooding on the Red is to first control how fast the water enters the channel. Of course this means landowners (farmers) will be affected, but the solution does not mean they will have to permanently give up their land. During times of heavy flooding, landowners could be financially compensated as portions of their lands are used to hold excess flood waters. During normal or dry conditions, farmers would work their land as usual. Since major flooding is not an annual event, landowners should not have to be burdened too often.

Using a series of retention ponds may also have a beneficial financial impact on the proposed diversion, as the size and scope of that project could potentially be scaled back. Plus, these ponds could be constructed more quickly, giving a more immediate solution and allowing more time to complete the diversion.

Thank you for time,

Lon Keller 641 41st Ave S Moorhead, MN 56560

From: Brant Bigger [b_bigger@netzero.com]
Sent: Tuesday, May 26, 2009 12:06 PM

To: Evans, Craig O MVP Subject: Evans Craig O MVP

Thank you for the information. The slides from the meeting indicate there's a mailing list for information. Can you please add me to that list? Thanks again, Brant.

Brant B. Bigger 13248 US Hwy 10

Lake Park, MN 56554-9631 218-234-6906 b_bigger@netzero.net

----- Original Message -----

From: "Evans, Craig O MVP" <craig.o.evans@usace.army.mil>

To: "Brant Bigger" <b_bigger@netzero.com>

Cc: "Snyder, Aaron M MVP" <Aaron.M.Snyder@usace.army.mil>, "Schmit,

Thomas A MVP" <Thomas.A.Schmit@usace.army.mil>

Subject: RE: F-M flood meetings

Date: Thu, 21 May 2009 15:13:26 -0500

Hi Brant,

We did not publish any maps showing the preliminary alignments of either the levees or the diversion. In general, the levees would follow the river banks and tie into high ground east and west of the river. We plan to look at diversions in both MN and ND that would start near where the Wild Rice River enters the Red and end at the Red somewhere northwest of Kragnes, MN. That's as specific as we can really be right now. You can expect more specifics this fall.

We have a project information paper posted on our Website: http://www.mvp.usace.army.mil/fl_damage_reduct/default.asp?pageid=1455

We also have a project Website where we'll post our slides and handouts from the public meetings (look for that info next week): http://www.internationalwaterinstitute.org/feasibility/index.htm

I hope you find this information helpful. Please let me know if you have any other questions about the Fargo-Moorhead Metro Feasibility Study.

Thanks,

Craig Evans

Senior Planner & Project Manager

St. Paul District

U.S. Army Corps of Engineers

Office: (651) 290-5594 Mobile: (612) 518-3413

e-mail: craig.o.evans@usace.army.mil

----Original Message----

From: Brant Bigger [mailto:b_bigger@netzero.com]

Sent: Thursday, May 21, 2009 12:53 PM

To: Evans, Craig O MVP Subject: F-M flood meetings

Hello Craig,

I was unable to attend either of the informational meetings held in Fargo & Moorhead this week. I've looked on the Corps's website, but can't find any information about the proposed levees &/or diversion. Can you direct me to the correct information. I'm mainly looking for general information about the size of the diversion, its possible route & other items of that nature.

Thank you for your time & the hard work you & the rest of the Corp are putting into this project.

Brant B. Bigger 13248 US Hwy 10 Lake Park, MN 56554-9631 218-234-6906 b_bigger@netzero.net

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Click here to find the perfect banking opportunity! http://thirdpartyoffers.netzero.net/TGL2242/fc/BLSrjpYZUDNmEYF6JnIll3zSPODd2

From: Evans, Craig O MVP

Sent: Tuesday, June 02, 2009 4:41 PM

To: Schmit, Thomas A MVP; Snyder, Aaron M MVP

Subject: FW: Red River Flooding

Thomas,

Please add this to our "ideas" folder and add Mr. Majkrzak to the e-mail list.

thanks, Craig

----Original Message----From: Evans, Craig O MVP

Sent: Tuesday, June 02, 2009 4:40 PM

To: 'Dave Majkrzak'

Subject: RE: Red River Flooding

Thanks for your suggestions, Dave. It was a pleasure visiting with you today. I'll add this concept to our list of alternatives, and we'll put you on our e-mail list for further updates.

Sincerely,
Craig Evans
Senior Planner & Project Manager
St. Paul District
U.S. Army Corps of Engineers
Office: (651) 290-5594
Mobile: (612) 518-3413

e-mail: craig.o.evans@usace.army.mil

----Original Message----

From: Dave Majkrzak [mailto:dave.majkrzak@crary.com]

Sent: Tuesday, June 02, 2009 4:19 PM

To: Evans, Craig O MVP Subject: Red River Flooding

Thank you for your phone time discussing the flooding problems in the Fargo/Moorhead area of the Red River.

To summarize: I am proposing you consider the I-29 right of way as a potential open viaduct during major floods, and as a roadway during normal times. I also suggested a "split" in the Interstate I-29 traffic to create a ND side, and a MN side North/South "beltway". These driving road beltways would also be mini diversion channels, holding and forcing the water to flow north, protecting the cities from overland flooding from small creeks and coulees from the West, and East directions.

The goal of this would be to split the Red River flows into four (or maybe three, if the MN side was not deemed necessary) channels. These

channels would be the Red River, the I-29 viaduct, the West side beltway/diversion and the East side beltway/diversion. Possible transportation funds would be available as well, as the beltway driving needs would be a big asset to both cities.

Please put me on your distribution list.

Thank You. Phone 701-499-5926

David Majkrzak, P.E.

802 Sheyenne Street

West Fargo ND 58078

From: Evans, Craig O MVP

Sent: Saturday, June 06, 2009 9:21 AM

To: 'jimmel@ideaone.net'

Cc: Snyder, Aaron M MVP; Schmit, Thomas A MVP Subject: Fargo-Moorhead Metro Feasibility Study reply

Mr. Armfeld,

Thank you for attending one of our public meetings in May. This e-mail is in response to your following question: "Unless the southside project is an important and a part of your plan why proceed?"

We are still in the preliminary stages of the Fargo-Moorhead Metro Feasibility study, but we know that our project needs to include the southern part of Fargo. We are currently on a parallel course with the city of Fargo's Southside Flood Control project. The city prefers to keep moving on their study so they will be ready to build something as soon as possible, regardless what happens with the Federal study. The Corps sees the proposed Fargo Southside project as one alternative to be considered along with the other concepts we will assess.

For more information on the study:

We have a project information paper posted on our Website: http://www.mvp.usace.army.mil/fl_damage_reduct/default.asp?pageid=1455

We also have a project Website where we'll post our slides and handouts from the public meetings:

http://www.internationalwaterinstitute.org/feasibility/index.htm

Thanks again for your interest,

Craig Evans Senior Planner & Project Manager St. Paul District

U.S. Army Corps of Engineers

Office: (651) 290-5594 Mobile: (612) 518-3413

e-mail: craig.o.evans@usace.army.mil

From: Evans, Craig O MVP

Sent: Saturday, June 06, 2009 9:33 AM

To: 'mjbreker@yahoo.com'

Cc: Snyder, Aaron M MVP; Schmit, Thomas A MVP

Subject: Response to question from Fargo-Moorhead Metro Feasibility Study

Mr. Breker,

Thank you for attending one of our public meetings in May. This e-mail is in response to your following question: "As a Fargo resident and farmer from the southern Red River Valley, I have interests in protecting both Fargo and my farm and cropland. I am interested in the economic analysis of all potential upstream water retention. Please contact me regarding the above."

The Fargo-Moorhead Metro Feasibility study is concentrating on actions we could take in the metropolitan area. The Corps is working on another study to look at potential water retention upstream of Fargo-Moorhead—the Fargo-Moorhead and Upstream Feasibility Study. We will incorporate information from the upstream study into our planning in the Metro study, and we will continue to look for flood storage opportunities.

For more information on the studies:

We have project information papers posted on our Website:

Metro study:

http://www.mvp.usace.army.mil/fl_damage_reduct/default.asp?pageid=1455

Upstream study:

http://www.mvp.usace.army.mil/fl_damage_reduct/default.asp?pageid=907

We also have a project Website where we'll post our slides and handouts from the public meetings:

http://www.internationalwaterinstitute.org/feasibility/index.htm

Thanks again for your interest,

Craig Evans

Senior Planner & Project Manager

St. Paul District

U.S. Army Corps of Engineers

Office: (651) 290-5594 Mobile: (612) 518-3413

e-mail: craig.o.evans@usace.army.mil

From: Evans, Craig O MVP

Sent: Saturday, June 06, 2009 10:33 AM

To: 'dlhaugen@cableone.net'

Cc: Snyder, Aaron M MVP; Schmit, Thomas A MVP

Subject: Response to question from Fargo-Moorhead Metro Feasibility Study

Ms. Haugen,

Thank you for attending our public meeting in Moorhead on May 20. This e-mail is in response to your following question: "Is there an aquifer newly discovered south of Moorhead, west over the proposed diversion, and east of the Red? We wouldn't cause potential damage to clean water source in times of drought?"

We are aware of the potential for our alternatives to affect groundwater, and we want to avoid any adverse impacts to aquifers. We are taking soil borings and working with the Minnesota Department of Natural Resources and other agencies to determine where aquifers exist. Our preliminary diversion alignment was chosen to be west of the known Buffalo aquifer.

For more information on the study:

We have a project information paper posted on our Website: http://www.mvp.usace.army.mil/fl_damage_reduct/default.asp?pageid=1455

We also have a project Website where we'll post our slides and handouts from the public meetings:

http://www.internationalwaterinstitute.org/feasibility/index.htm

Thanks again for your interest and comments,

Craig Evans

Senior Planner & Project Manager

St. Paul District

U.S. Army Corps of Engineers

Office: (651) 290-5594 Mobile: (612) 518-3413

e-mail: craiq.o.evans@usace.army.mil

From: Evans, Craig O MVP

Sent: Saturday, June 06, 2009 10:11 AM

To: 'Barbr.headrick@gmail.com'

Cc: Snyder, Aaron M MVP; Schmit, Thomas A MVP

Subject: FW: Response to question from Fargo-Moorhead Metro Feasibility

Study

Ms. Headrick,

Thank you for attending our public meeting in Moorhead on May 20. This e-mail is in response to your following questions: "How much will be on website as you work on study over next 4 months? How will Corps handle currently existing structures, such as the Sheyenne diversion in West Fargo, could they be altered to work better for the full region or must your project deal with it as is?"

Concerning your first question of updating the website: we may post some new information or correct some information that is no longer valid. Due to time constraints, the website will not have set update intervals.

Regarding currently existing structures: Since the study is in the preliminary stages, we are just beginning to study diversion alternatives in North Dakota. We will consider modifications to the Sheyenne diversion in addition to other possible diversion alignments in North Dakota and Minnesota.

For more information on the study:

We have a project information paper posted on our Website: http://www.mvp.usace.army.mil/fl_damage_reduct/default.asp?pageid=1455

We also have a project Website where we'll post our slides and handouts from the public meetings:

http://www.internationalwaterinstitute.org/feasibility/index.htm

Thanks again for your interest,

Craig Evans Senior Planner & Project Manager St. Paul District U.S. Army Corps of Engineers

Office: (651) 290-5594 Mobile: (612) 518-3413

e-mail: craig.o.evans@usace.army.mil

From: Evans, Craig O MVP

Sent: Saturday, June 06, 2009 9:57 AM

To: 'djista@loretel.net'

Cc: Snyder, Aaron M MVP; Schmit, Thomas A MVP

Subject: Response to question from Fargo-Moorhead Metro Feasibility Study

Ms. Ista,

Thank you for attending our public meeting in Moorhead on May 20. This e-mail is in response to the written comments you provided at the meeting regarding downstream impacts and the need for additional flood storage.

Regarding your question about measuring downstream impacts: we will measure the impacts of the project as far downstream as the impacts exist. We will also be studying the impacts upstream of a flood control project. Hence we are not only studying the Fargo-Moorhead metropolitan area, we will be studying any part of the Red River Valley that is affected from flood mitigation efforts in the F-M area. Our intent is to minimize any impacts, and the project will need to compensate for any economic impacts that rise to the level of a real estate "taking."

Regarding flood storage, we are considering flood storage in another feasibility study, the Fargo-Moorhead and Upstream Feasibility study that started in 2004. We are finding it difficult to show economic justification for Federal participation in flood storage in the upper Red River Basin, but we continue to look for opportunities to combine flood storage with ecosystem restoration in ways that may allow for Federal projects. We are also building hydrologic models that can assist local jurisdictions when they consider non-federal flood storage projects.

For more information on the Fargo-Moorhead Metro study:

We have a project information paper posted on our Website: http://www.mvp.usace.army.mil/fl_damage_reduct/default.asp?pageid=1455

We also have a project Website where we'll post our slides and handouts from the public meetings:

http://www.internationalwaterinstitute.org/feasibility/index.htm

Thanks again for your interest,

Craig Evans
Senior Planner & Project Manager
St. Paul District
U.S. Army Corps of Engineers
Office: (651) 290-5594
Mobile: (612) 518-3413

e-mail: craig.o.evans@usace.army.mil

Diane Ista - How far downstream do you measure impacts? We need assistance to River which would reduce the flows to the Red. djista@loretel.net See full comment in the written comment section.

From: Evans, Craig O MVP

Sent: Saturday, June 06, 2009 11:40 AM

To: 'lskeller@cableone.net'

Cc: Snyder, Aaron M MVP; Schmit, Thomas A MVP Subject: RE: Flood control idea for Red River Valley

Mr. Keller,

Thank you for your suggestions and very valuable information. We will consider them in our study process. At our public meetings on May 19th and 20th, we tried to stress there is no plan that is a silver bullet; multiple alternatives could be implemented together to make the best plan. As we continue our study, we would like the public to be involved as much as possible.

For more information on the study:

We have a project information paper posted on our Website: http://www.mvp.usace.army.mil/fl_damage_reduct/default.asp?pageid=1455

We also have a project Website where we'll post our slides and handouts from the public meetings:

http://www.internationalwaterinstitute.org/feasibility/index.htm

Thanks again for your interest and ideas,

Craig Evans

Senior Planner & Project Manager

St. Paul District

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e-mail: craig.o.evans@usace.army.mil

----Original Message----

From: Lon Shelley CableOne [mailto:lskeller@cableone.net]

Sent: Monday, May 25, 2009 4:22 PM

To: Evans, Craig O MVP

Subject: Flood control idea for Red River Valley

Craig,

The latest idea I've been hearing about involves creating a large diversion channel around F-M on the Minnesota side. While I do feel this option will provide a permanent solution for residents of the F-M metro, I fear it will cause additional issues for residents downstream. For an example, research the recent events for residents living north of Winnipeg. There were several news reports of people becoming overwhelmed with the rapidly moving water coming from the Red and the diversion.

1

Due to the topography of the land, I feel permanent flood protection must include multiple solutions. In conjunction with a diversion channel to protect the major metropolitan areas, I'd like to see a series of large holding ponds up and down the river, both in North Dakota and Minnesota. I feel the best way to control flooding on the Red is to first control how fast the water enters the channel. Of course this means landowners (farmers) will be affected, but the solution does not mean they will have to permanently give up their land. During times of heavy flooding, landowners could be financially compensated as portions of their lands are used to hold excess flood waters. During normal or dry conditions, farmers would work their land as usual. Since major flooding is not an annual event, landowners should not have to be burdened too often.

Using a series of retention ponds may also have a beneficial financial impact on the proposed diversion, as the size and scope of that project could potentially be scaled back. Plus, these ponds could be constructed more quickly, giving a more immediate solution and allowing more time to complete the diversion.

Thank you for time,

Lon Keller 641 41st Ave S Moorhead, MN 56560

From: Evans, Craig O MVP

Sent: Saturday, June 06, 2009 9:40 AM

To: 'bonniek@i29.net'

Cc: Snyder, Aaron M MVP; Schmit, Thomas A MVP

Subject: Response to question from Fargo-Moorhead Metro Feasibility Study

Bonnie and Charles Koski,

Thank you for attending one of our public meetings in May. This e-mail is in response to your following question: "How can you adjust your project for a river that flows north into frozen drainage channel?"

Your question raises one of the many challenges in designing permanent flood mitigation in the Red River Valley. As we look at various alternatives, we will consider downstream conditions and factor them into our designs.

For more information on the study:

We have a project information paper posted on our Website: http://www.mvp.usace.army.mil/fl_damage_reduct/default.asp?pageid=1455

We also have a project Website where we'll post our slides and handouts from the public meetings:

http://www.internationalwaterinstitute.org/feasibility/index.htm

Thanks again for your interest,

Craig Evans Senior Planner & Project Manager St. Paul District U.S. Army Corps of Engineers Office: (651) 290-5594

Mobile: (612) 518-3413

e-mail: craig.o.evans@usace.army.mil

Charles Koski - Any project should consider redundancies to allow for modification of any catastrophic failure le diversion and modified flood barrier and or storage. How can you adjust your project for a river that flows north into frozen drainage channel? bonniek@i29.net

From: Evans, Craig O MVP

Sent: Saturday, June 06, 2009 9:42 AM

To: 'dlahren@aol.com'

Cc: Snyder, Aaron M MVP; Schmit, Thomas A MVP

Subject: Response to question from Fargo-Moorhead Metro Feasibility Study

Mr. Lahren,

Thank you for attending one of our public meetings in May. This e-mail is in response to your following question: "Why do you need a 500 ft wide base at the bottom of the diversion?"

The design of the diversion alternative is in the preliminary stages. The 500 feet is only preliminary and was used as a width that would carry an approximate volume of water around the metropolitian area. In the upcoming months we will be conducting further study into this topic, as well as optimizing the width and depth of a proposed diversion alternative.

For more information on the study:

We have a project information paper posted on our Website: http://www.mvp.usace.army.mil/fl_damage_reduct/default.asp?pageid=1455

We also have a project Website where we'll post our slides and handouts from the public meetings:

http://www.internationalwaterinstitute.org/feasibility/index.htm

Thanks again for your interest,

Craig Evans Senior Planner & Project Manager St. Paul District

U.S. Army Corps of Engineers

Office: (651) 290-5594 Mobile: (612) 518-3413

e-mail: craig.o.evans@usace.army.mil

From: Evans, Craig O MVP

Sent: Saturday, June 06, 2009 12:32 PM

To: 'FM Flood Group'

Cc: Snyder, Aaron M MVP; Schmit, Thomas A MVP

Subject: RE: Flood protection for Fargo

Mr. Sell,

Thank you for sharing your comments with us. We will consider them as we continue to refine our diversion alternatives along with several other concepts that could reduce flood risk in the study area.

Regarding the channel widths, I'm not sure where the channel is only 100 feet wide. I know that at the 32nd Ave. South Dam the channel is closer to 180 feet wide during most of the year, but during flood events it is significantly wider than that. The natural channel is also deeper than a diversion would likely be, so keep in mind that width is only one factor in our design. We will look at various cross sections to optimize the design.

As we continue our study, we would like the public to be involved as much as possible.

For more information on the study:

We have a project information paper posted on our Website: http://www.mvp.usace.army.mil/fl_damage_reduct/default.asp?pageid=1455

We also have a project Website where we'll post our slides and handouts from the public meetings:

http://www.internationalwaterinstitute.org/feasibility/index.htm

Thanks again for your interest and ideas,

Craig Evans

Senior Planner & Project Manager

St. Paul District

U.S. Army Corps of Engineers

Office: (651) 290-5594 Mobile: (612) 518-3413

e-mail: craig.o.evans@usace.army.mil

----Original Message----

From: FM Flood Group [mailto:fmflood@twoface.dreamhost.com]

Sent: Friday, June 05, 2009 2:21 PM

To: Evans, Craig O MVP

Subject: Flood protection for Fargo

This email was sent on behalf of Rob Sell (robsell@gmail.com) by the FM Flood Control Group

Mr. Craig Evans:

Sorry about that, I meant to paste in something else and then I accidentally sent it out.

I have a tough time believing the corps recommendation that a a diversion would need to be 500 feet wide. why would we need a diversion 5 times as wide as the river is? I believe that the diversion study should be re-evaluated.

We need a 100 year solution! The only method of flood protection that is sure to work is a diversion. Permanent levees could fail, especially at the extreme predictions of possible heights that were projected for F-M in the 2009 flood fight. Levees pose a greater risk of a catastrophic failure. The 2009 flood made us realize that a flood over 45 feet is possible. Homes have been destroyed because they were sliding into the river, the old Trollwood and Edgewood clubhouse were sliding into the river, roads, dikes, etc have been damaged by the unstable soil along the river. Building anything 50 plus feet above the river bed and on the banks of the Red River is sure to fail at some point. It would not be necessary to reroute all of the water in the Red River around the towns. The Winnipeg diversion has worked great and protected their city in 1997. The floodway capacity was at 60,000 cfs in 1997. The original diversion price adjusted to today was \$350 to \$500 million.

In F-M the river is about 100 feet wide, in Winnipeg the river is about 450 feet wide (nearly 5 times as wide). The red river valley is full of ditches (drains). The diversion would just be a bigger ditch. A bottom width of about 50 feet appears to be what would be required based on the 2009 flow. The flow at Fargo was 29,100 cubic feet per second at 40.82 feet this spring. The cost with a smaller diversion could be significantly reduced and should give it a favorable cost benefit ratio.

The proposal of the Corp to start at the Wild Rice River and end way north of Harwood is very good. The diversion would offer better protection from overland flooding on the ND side of the river. Property will have to be taken by eminent domain; either homes along the river and drains for dikes and flood walls etc., or farmland for the diversion. The \$909 million for the diversion would seem to have much greater benefits than the levees. We need to find a way to get a favorable cost benefit ratio or find another way to fund the diversion It should be selected immediately as the preferred method. Sincerely Rob Sell

From: Evans, Craig O MVP

Sent: Saturday, June 06, 2009 10:23 AM

To: 'Ducksoup25@yahoo.com'

Cc: Snyder, Aaron M MVP; Schmit, Thomas A MVP

Subject: Response to question from Fargo-Moorhead Metro Feasibility Study

Mr. Wolf,

Thank you for attending our public meeting in Moorhead on May 20. This e-mail is in response to the written questions you provided at the meeting: "I live in section 6, Oakport Township, Clay County. I see that there is a proposed levee that encompasses the area between 70th Ave NW and 80th Ave NW from the river to Broadway St. Question: How did this levee become part of the proposal: At present there are only a dozen or more homes in the protected area, an area of about 300 acres. I live just north of the levee area – how will this affect my property?"

The layout of the proposed levee system is very preliminary, and we we are in the process of refining it. We must show that each levee section is economically justified, so if the section to which you refer doesn't make sense, our analyses should show that.

It is too early to say what impacts any of our proposals will have on properties downstream or upstream of the project. Our intent is to minimize impacts, and we would be required to compensate for any economic impacts that rise to the level of a real estate "taking."

You can expect more specifics on the levee layout and any potential impacts this fall.

For more information on the study:

We have a project information paper posted on our Website: http://www.mvp.usace.army.mil/fl_damage_reduct/default.asp?pageid=1455

We also have a project Website where we'll post our slides and handouts from the public meetings:

http://www.internationalwaterinstitute.org/feasibility/index.htm

Thanks again for your interest,

Craig Evans Senior Planner & Project Manager St. Paul District U.S. Army Corps of Engineers Office: (651) 290-5594

Mobile: (612) 518-3413

e-mail: craig.o.evans@usace.army.mil

From: Evans, Craig O MVP

Sent: Monday, June 08, 2009 10:01 AM

To: 'Ron Bergan'

Cc: Schmit, Thomas A MVP; Snyder, Aaron M MVP

Subject: RE: Fargo diversion comments

Mr. and Mrs. Bergan,

Thank you for your suggestions and very valuable information about diversion alternatives. We will consider your comments in our study process.

For more information on the study:

We have a project information paper posted on our Website: http://www.mvp.usace.army.mil/fl_damage_reduct/default.asp?pageid=1455

We also have a project Website where we'll post our slides and handouts from the public meetings:

http://www.internationalwaterinstitute.org/feasibility/index.htm

Thanks again for your interest and ideas,

Craig Evans

Senior Planner & Project Manager

St. Paul District

U.S. Army Corps of Engineers

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e-mail: craig.o.evans@usace.army.mil

----Original Message----

From: Ron Bergan [mailto:ronb@facnd.com]

Sent: Sunday, June 07, 2009 6:15 PM

To: Evans, Craig O MVP; Snyder, Aaron M MVP

Subject: Fargo diversion comments

To the Army Corps of Engineers,

We need a 100 plus year solution. The only method of flood protection that is sure to work is a diversion around Fargo-Moorhead.

The failure of floodwalls, dikes, dams this spring is proof that these methods will not protect us for the next 100 years. We know this soil is very unstable, dikes settle and structures are damaged with the movement of the soil. Rodents, humans, etc do damage to the structures. The Oak Grove High School damage was a result of the new flood wall failure. From the Fargo Forum "eroding Clausen Springs Dam near Kathryn" and "LaMoure County keeping an eye on eroding dam - with an eroding spillway". Homes have been destroyed because they were sliding

1

into the river, the old Trollwood and Edgewood clubhouse were sliding into the river; roads, dikes, etc have been damaged or destroyed. Building 50 plus feet above the river bed and on the banks of the Red River is sure to fail at some point.

Even with permanent dikes, flood walls, etc we could have a failure, especially at the extreme predictions of possible heights projected for F-M in the 2009 flood fight. Our experience this year has made us realize that a flood over 45' is possible. In that case F-M and surrounding area could suffer like Grand Forks did in 1997.

What will the height of the river be if the river hits a flood stage of 43' with the Main Avenue bridge acting like a dam? Would that be 2' to 4' higher? If so would the river level be 46 feet?

The red river valley is full of ditches (drains). The diversion would just be a bigger ditch.

We do not have to send all the water in the Red River around the towns. At a flood level of maybe 25° , water could begin to flow into the diversion and maybe at 30° the water flowing through the towns would equal the 2009 flood of 40.82° . The difference between a 40.82° flood level and the flow rate at a 30° flood level, would only require an area 20° by 40° to divert the water above the 30° flood level if the speed is the same.

The 500 foot width projected for the bottom of the diversion by the Corps seems very wide. A bottom width of about 50' appears to be what would be required based on three times the flow between 30' and 41' flood levels and also a comparison to the original Winnipeg diversion which was built to handle 60,000 cfs. The flow at Fargo was 29,100 cfs at 40.82' this spring. This would reduce the cost significantly and should give it a favorable cost benefit ratio. The Winnipeg diversion is 30' deep. The Winnipeg diversion worked great in the 1997 flood. In F-M the river is 100' wide compared to 450' in Winnipeg (nearly 5 times as wide).

Some information from Biot Report #392: August 26, 2006 about the Winnipeg expansion of the diversion after the 1997 flood: The diversion was widened to 350' but not deepened. It increased the floodway capacity from 60,000 cfs to 140,000 cfs. The original diversion cost in today's dollars was \$350 to \$500 million. The expansion involved replacing 12 bridges, two railroad crossings and excavation of 27 million cubic yards of earth. It has been used to divert water in 20 of 37 years.

The North Dakota side may be better for political reasons. It would offer better protection from overland flooding as this appears to be greater on the ND side of the river. The diversion should start at the Wild Rice River as suggested by the Corps, but should be started on the west side of I29 at drain 47 and take all of its flow plus part of the Red River flow. Comparing the flow at Hixon to Fargo this would indicate about 15,000 cfs should be diverted. That is the amount needed to keep the river at 30 feet. Looking at topographical maps for the area the water will flow from the Wild Rice at Interstate 29 and around

West Fargo and north to the Red with no problems. The crossing of the Sheyenne will require structures or controls to only allow a limited amount of water to go through West Fargo. It may be best to use the West Fargo diversion and increase its capacity for the part around West Fargo. The area required for the flow under bridges should be approximately 70' at bottom and 100' at the top compared to the maybe 500' width at the top needed to have gently sloping sides.

The land can continue to be used for farming with alfalfa hay grown on the slopes as Winnipeg does now.

Property will have to be acquired by eminent domain; either homes and land along the river and drains for levees, or farmland for the diversion.

Dikes, floodwalls, etc will raise the level of the river. As you force the water through a narrower space the water has no where else to go but up. Will that mean the river will be 6" or 2' higher? The exact amount will depend on the narrowest spot, river height, flow rates etc. Any extra height causes great concerns.

A diversion will lower the level through F-M. The higher the water the more difficult it is to protect F-M and the greater risk of a catastrophic failure. There is basically no chance of failure of a diversion.

The cost benefit ratio of the levee system was 1.1 for the \$625 million dollar proposal and the diversion was shown at .65 which would equal \$590 million. How can the diversion have less total benefit? It would cover a much greater area. We could save many of the homes now being considered for destruction. It would also save the view for many homeowners and therefore provide an economic benefit by the higher values. River frontage is the highest valued land for residential usage. It would add value to the total length on both sides of the river. Was the cost of maintaining and the repair and replacement of dikes, floodwall, etc calculated in the cost benefit ratios? The estimated 70 miles of protection for the area will require a lot of mowing, trimming, etc each year. Was the improved drainage for farmland along the diversion included? The dikes, floodwall and such things are unsightly. How was the possibility of failure to the levee system added to the benefit for the diversion? A failure at 43' plus would totally flood at least one city - Corps projection \$3 billion cost. National Guard would not be patrolling the levees and instant response teams will not be at the ready. We believe the diversion would be worth at least twice the benefit of the other systems.

Was the time lost at work and the extra costs and lost business (stores closed 6-8 days, MeritCare, nursing homes, etc evacuations, school shutdowns, loss of visitors and events, etc), considered in the cost benefit ratio? How about the stress on all our people or the value of the ability for the area to grow?

Even if the diversion costs \$1 billion, the \$200 million Fargo is proposing for flood protection should cover its share. The diversion should be selected immediately as the preferred method.

What if Devils Lake overflows and erodes the 18' of sediment in the old channel from previous times? This would most likely happen when we were experiencing flooding downstream so that it may also cause a failure of the Baldhill dam at Valley City.

If the estimate of 50 feet at the bottom is close and using some of these methods and suggestions, maybe it could be completed for \$600 million. This is about the same cost as the \$660 million budget for the recent expansion of the Winnipeg diversion to handle a 700 year flood.

Thanks for your consideration of our comments,

Ron and Mary Alice Bergan 311 11 Ave S Fargo, ND 58103 701-237-3226

From: Ron Bergan [ronb@facnd.com]
Sent: Ron Bergan [ronb@facnd.com]
Friday, June 19, 2009 4:50 PM

To: Evans, Craig O MVP

Cc: Schmit, Thomas A MVP; Snyder, Aaron M MVP **Subject:** Fargo - main avenue flood problem at 40 feet

Attachments: G4TD2931.JPG; G4TD2944.JPG; G4TD2949.JPG; G4TD2956.JPG









G4TD2931.JPG G4TD2944.JPG

G4TD2949.JPG

G4TD2956.JPG

To the Army Corps of Engineers;

We now know that the main avenue bridge acts as a dam at about 40 feet, see the pictures. At about 41 feet the water will be backed up and flow over both ends of the bridge and into our cities. The diversion is the only answer.

I now believe the river was only at 40 feet; but, with a one inch dam created by the main avenue bridge, it caused the water to be between 1 $\frac{1}{2}$ ' and 2' up on the beams and a river reading of 40.82' at 13 Avenue south. See the pictures taken today 6-19 by Brad Grosz of the branches caught up in the beams and structure. We have seen lots of branches in all areas we can see from walking on both sides of the bridge. I estimated the area between main avenue and I 94 covered by water at 40' to be 364 acres (roughly measured with the computer maps). One foot of restriction would add 17 feet of height to the water in this area in 24 hours! The river probably flows faster from the pressure as the water gets higher and my calculation is just a ballpark number. We are getting an engineer to look at these calculations.

Winnipeg expanded their diversion because the 1826 flood was 40% larger than the 1997 flood. We have also learned today that their \$600 million expansion is significantly under budget. A levee system has a much higher chance of failure and a failure at a high flood level will put both cities under water.

We are asking the Corps to extend the public comment period two weeks. We have a committee of top business people and a well known person who

just agreed yesterday to lead the effort and hope we can get more time to develop and present information to the Corps. We will have a press conference next week. We believe the election to approve the flood protection sales tax which is June 30, 2009 will generate lots of discussion and comments for the Corps.

We believe the diversion has a much higher benefit to F-M and it does not have to cost more, I think it will be less costly. We should not have to be totally devastated to get some federal money.

Thanks for your consideration,

Ron Bergan, ceo

Fargo Assembly Co.

3300 7 Ave N

Fargo, ND 58102

Office 701-356-7400 Cell 701-361-0715

From: Snyder, Aaron M MVP

Sent: Sunday, June 21, 2009 8:18 AM

To: Schmit, Thomas A MVP; Evans, Craig O MVP

Subject: FW: Flood Protection

FYI - you probably got this already though.

Aaron M. Snyder
USACE Planner and Project Manager, PMP
MVD Plan Formulation Regional Technical Specialist
651-290-5489
612-518-0355 (Cell)
Aaron.M.Snyder@usace.army.mil

----Original Message----

From: Herb Siemens [mailto:herbanni@i29.net]

Sent: Friday, June 19, 2009 4:51 PM

To: Snyder, Aaron M MVP

Cc: fmflood@fmfloodcontrol.com

Subject: Flood Protection

Project Manager Snyder,

My wife and I moved to Fargo from Winnipeg 10 years ago.

I don't understand why people are so reluctant to put proper permanent flood protection in place. All the water that went thru Fargo (plus a lot more) went thru Winnipeg this spring. The "flood waters" were a non event in Winnipeg this year because of the diversion that they have in place. Without the diversion Winnipeg would have been in a horrible mess, but everything worked the way it was supposed to and there were no problems.

Putting up floodwalls, levee's, etc. is a collection of bandaids that you can never be sure will really do the job, they also require a lot of maintenance. Plus, they are very unsightly. Can you imagine walls & levee's along the river in Linden Wood Park, It won't be nearly as much fun to go there when you have to look at those things. The Fargo Parks Board say that they have spent over \$1 million already this year on protection, cleanup etc. That number does not include lost revenue. As of today June 18 the river is going above flood stage again, the campground is closed. Everything will have to be cleanded up again and they continue to loose revenue.

Defacing river front property with walls, levee's etc is a horrible thing, what will happen to property values in the nicest neighborhood's in Fargo. In adition, the insecurity that people feel - worrying about floods takes a terribel toll on them and is very costly to businesses.

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Originally they said it could not be done in Winnipeg either; but people with vision, forsight and determination made it happen. After the flood of '97 it was not very difficult to get all levels of government together to agree to double the size of the floodway. that expansion is basically complete now and helped save the City of Winnipeg again this spring. They have used the diversion there more than 20 times in the last 37 years, that is real proof of the cost benefit.

It is not a question of can we do it or should we do it, the only questions should be HOW QUICKLY CAN WE GET A DIVERSION BUILT?

Herb & Anni Siemens 404 8th Street South Fargo, ND 58103

From: Evans, Craig O MVP

Sent: Monday, June 22, 2009 3:43 PM

To: 'Ron Bergan'

Cc: Schmit, Thomas A MVP; Snyder, Aaron M MVP; Lesher, Michael D

MVP; Sobiech, Jonathan J MVP; 'awalker@cityoffargo.com';

bob.zimmerman@ci.moorhead.mn.us; Buffalo Red River Watershed

District; Jody Bertrand; Mark Bittner

Subject: RE: Fargo flood protection

Mr. Bergan,

Thank you for your e-mails. I forwarded the bridge information and photos to our hydraulic engineer to make sure our models accurately reflect existing conditions. We will consider your suggestions for diversion alternatives as we continue our study.

The Corps cannot endorse or comment on the information you propose to present to the press. We are conducting hydrologic modeling to inform the planning process, and we will use those models to assess several alternative widths, depths and alignments for diversions and levees. The preliminary cost estimate released in May was based on only one possible configuration, and it is by no means the final answer.

Regarding your request to extend our comment period two more weeks: we will accept your input when you can get it to us. However, we must begin the process of narrowing down the alternatives in order to stay on schedule. The June 22 date was set to ensure that we could address people's major concerns as we proceed with the study within the original schedule. Any significant comments received later in the process may delay completion of the study.

Thanks, again, for your interest in the feasibility study. I look forward to hearing more from you as soon as possible.

Craig Evans

Senior Planner & Project Manager

St. Paul District

U.S. Army Corps of Engineers

Office: (651) 290-5594 Mobile: (612) 518-3413

e-mail: craig.o.evans@usace.army.mil

----Original Message----

From: Ron Bergan [mailto:ronb@facnd.com] Sent: Monday, June 22, 2009 3:08 PM

To: Evans, Craig O MVP

Cc: Schmit, Thomas A MVP; Snyder, Aaron M MVP

Subject: Fargo flood protection

Dear Craig,

We are developing some information for a press conference to support a diversion. We would consider any changes to our press material you think we should make. We know there are many details to work out such as finding a low cost way to cross the rivers.

Did you get the pictures I emailed you late Friday? They showed that the water was up on the beams of the Main Avenue Bridge and that that it makes a good dam. It appears we can not go over about 41 feet without flooding both cities. I will resend without the pictures.

Ron

Proposed Design Criteria for Protection of F-M to 50 Feet

River	I.evel	Riv	er Level	
Flood with I	Level	with Diversi	on	Diversion Level
25′	25′		22' or less	100% above 22″
22′	30' Greater than	30′	22′	100% above
25′	35' Greater than 3	35′	25′	100% above
	41' needed 42-4	14′	30' Difference	used to calculate
30′	45′		32.5' 45' Topped	

50' 35' Topped

Cost Comparison for Diversion

F/M

Old Winnipeg New Winnipeg

Volume 15,000 cu ft/sec 60,000 cu ft/sec 140,000 cu ft/sec

Depth 20-30'

30'

Bottom Width 50'-100 150'

(est.) up to 350'

Top (field level) 500-700'

700-1000' 900-1200'

Spoil Bank Height 20' (est.) 20'

(est.) 30' (est.)

Highway Bridges
12 12

Railroad Bridges

Drop in Elevation 35'?

26′

Cost (in millions of dollars) \$600 (est.) \$350-\$500

* \$600**

*In today's dollars

** Nearing completion and under budget

QUESTIONS AND ANSWERS ABOUT A DIVERSION

- 1. Where would it start and end? Wild Rice River west of I 29 and end north of Argusville.
- 2. What areas would be protected? Both side of the river for the length of the diversion and to some extent about 10 miles south of the inlet.
- 3. What cities/areas would be protected? Fargo, Moorhead, West Fargo, Oakport, Briarwood, Round Hill, Hickson, Horace, Oxbow, Harwood, and more.
- 4. How much would be diverted? The total flow of the Wild Rice and the overland flooding from there to West Fargo which is about one half the flow of the Red River. Additional amounts from the Red River could be added if needed at a later time to maintain the best balance.
- 5. How much will the Federal Government pay? 65% or \$650 million of a \$1 billion project.
- 6. Where will the other money come from? States of ND and Minn and the cities of Fargo and Moorhead.
- 7. Does it work? It has worked as advertised in West Fargo, Winnipeg and other areas.
- 8. How soon could it be started? If a diversion could be selected as the method it should shorten the process.
- 9. Will it take a lot of farmland out of production? No, estimate it will only take 600 acres out and change 4000 from corn to alfalfa.
- 10. Why are we having these large floods? Wet cycle- see Devils Lake 8 of 10 record floods in the last 40 years.
- 11. What happens if the flood exceeds the capacity of the diversion? It overflows to the west and north over farmland.
- 12. Does it dump water on Harwood? No will enter the Red way north of Harwood and it is the same amount of water.
- 13. What is the size? It is estimated to be 20 to 30 feet deep and average 75 feet wide at the bottom and maybe 500-700 feet at the top.
- 14. Can Eminent Domain be used to acquire the land? Yes same as would be needed for a levee system.
- 15. What is the probability of a crest over the 2009 level? The national Weather Service on 4-4-09 indicated a 10% chance of 44.6 feet for the second crest.
- 16. Should we build more dams? Valley City had a major flood this year and about 100% of the water from its drainage area is stored in Devils Lake or flows into the Baldhill Dam. Spillways washing out such as Clausen Springs.
- 17. Should we hold the water on the land? This can work to a limited extent, but when it starts going overland it washes out the roads see 2009 news articles.
- 18. Can the Corps assure us the levee system will not fail? No!

- 1. The 1826 flood was 40% larger than the 1997 flood in Winnipeg. April 4, 2009 the National Weather Service said there was a 10% chance of a 44.6 foot crest in Fargo. F-M, not just property along the river, could be flooded.
- 2. A plan is needed to allow us a chance to survive a flood of this magnitude.
- 3. A 700 year flood can occur at any time it could be next year.
- 4. We are in a wet cycle.
- 5. The Red River soil is unstable.
- 6. F-M is the last major community in the valley with no significant permanent protection.
- 7. Sending one half the water into a diversion would make fighting a large flood manageable.
- 8. Must have a zero possibility of over a 40 foot flood so that the Main Avenue bridge does not act as a dam.
- 9. The design could route any water over say 22 feet until you reach say 30 feet down the diversion then about one half the entire flow.
- 10. The flow in a diversion is expected to be below ground level.
- Spoil banks would be more like a dike on the east side of the diversion.
- 11. Topping the diversion would flow west and north into fields.
- 12. Topping the proposed Corps levees would inundate the cities.
- 13. Physics the amount of water is not increased at the outlet by the diversion.
- 14. Levees have many failure modes such as: design flaws, shifting soil, water over or under, through, etc.
- 15. Squeezing the water ie in levees increases the height of the flood.
- 16. The slopes can be used to grow alfalfa.
- 17. Buyouts along the river are not required.
- 18. Residents of F-M can feel secure during a flood.
- 19. Stress would be reduced and lives saved (relocating the elderly and sick).
- 20. Will increase values along the river and in the cities.
- 21. The 2009 foot flood had a huge negative impact on the F-M economy West Acres Mall closed for days.

From: Matthew Feist [matthew.feist@gmail.com]

Sent: Monday, June 22, 2009 6:00 PM

To: Evans, Craig O MVP; Snyder, Aaron M MVP; DWalaker@cityoffargo.com; governor@nd.gov

Cc: fmflood@fmfloodcontrol.com

Subject: Public Input on Flood Control Measures for the Fargo-Moorhead

Area

Hello,

I am writing this letter in conjunction through the efforts of the fmfloodcontrol.com website. It has come to my attention that today is the last day for public input to the Army Corps of Engineers, thus I am writing this letter now.

Please consider the diversion plan as the permanent solution for flood control, for the Fargo-Moorhead metropolitan area. One only has to look to Winnipeg to see how successful that diversion has been at protecting their city from flood waters. I also believe that the cost of the diversion can be reduced through modifying the width, depth and length of the diversion needed to protect the area. The use of local contractors and laborers would also surely reduce the total costs. Though I admit, I am not an expert in these matters.

With the City of Fargo about to vote on its sales tax initiative, we will be able to fund an estimated \$200 million dollars, which would cover 22% of the total project's cost estimated \$909 million dollar cost. With the City of Moorhead, State of Minnesota, and State of North Dakota covering the remaining 13% (along with the 65% federal share), I don't understand why the diversion isn't being strongly considered as the optimal solution. We need a permanent solution for flood control to ensure that the Fargo-Moorhead metropolitan area never has to deal with another 1997 or 2009 flood, or even worse, had we not had the freezing temperatures half way through the battle, a complete loss of the city.

Thank you for your time and consideration,

Matthew J. Feist

From: sat711rang@aol.com

Sent: Tuesday, June 23, 2009 12:00 AM

To: Evans, Craig O MVP

Subject: A Diversion Is Best For Main Street Fargo Moorhead

Mr. Craig Evans,

I am writing to let you know that I support a diversion for flood protection of F-M and the surrounding areas. The Corps of Engineers has requested public comments. The diversion is the only sure protection. We need something that will protect us against a 500 year flood level! The only method of flood protection that is sure to work is a diversion around Fargo/Moorhead. Please urge the Corps to focus all efforts on a diversion.

My wife and I live on the Red River. The failure of floodwalls, dikes, and dams this spring is proof that these methods will not protect Fargo-Moorhead. Soils in the Valley are unstable, dikes settle and structures are damaged with the movement of the soil. The Oak Grove High School damage was a result of the new flood protection system failing. Homes have been destroyed because they were sliding into the river, the old Trollwood and Edgewood clubhouse are sliding into the river; roads, dikes, etc have been damaged or destroyed.

The 500 foot width projected for the bottom of the diversion by the Corps is too wide. A much narrower bottom width would work well based upon comparisons to the original Winnipeg diversion. This should reduce the cost significantly and would give it a favorable cost benefit ratio. The Winnipeg diversion is 30' deep. It has been used to divert water for 37 years. The Winnipeg diversion worked great in the 1997 flood when I lived in Drayton. I remember being interviewed on the radio after fighting the Drayton Flood Fight for 42 continuous hours without sleep. I warned that Winnipeg was in for big trouble. At the time I did understand the safety of their diversion project and its structural advantages for a successful flood fight.

A diversion should start on the North Dakota side at the Wild Rice River as suggested by the Corps, and should be started on the west side of I29. It may work to use the West Fargo diversion and increase its capacity for the part around West Fargo. Dikes and floodwalls are a very poor solution to a very complex problem. The extra height combined with the valleys unstable ground causes great long term concerns and it doesn't give us peace of mind that we are protected. A diversion will reduce the amount of water moving through the cities. In addition it would be 30 miles of water storage and that's significant and should be calculated. We could save the homes being considered for destruction. It would also save the view for many homeowners, including mine, and therefore provide economic benefit through higher=2 Ohome values and our quality of life. River frontage is the highest valued land for residential usage. A diversion will add value to the total length of both sides of the Red River.

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The diversion should be selected immediately as the preferred method. Dams and control structures within the diversion could be added to provide water for dry years. It could be filled from spring runoff. If the other dams used for water storage were full, the diversion could be kept dry and even farmed for that year.

Fighting this years flood cost my business many thousands of dollars and because of your strong leadership we were successful at staying dry. I know that you will do what you feel is best for our city. As someone who has done business and lived in the Vall ey for many years, a diversion is the best option. West Fargo sleeps well at night with theirs and Fargo and Moorhead need a diversion and we need it really soon.

Thank you for having this process to express our opinions.

Kent Satrang 311 11th Avenue South Condo Unit 104 Fargo, North Dakota

A Good Credit Score is 700 or Above. See yours in just 2 easy steps! "http://www.freecreditreport.com/pm/default.aspx?sc=668072%26hmpgID=62%26bcd=JunestepsfooterNO62>"http://www.freecreditreport.com/pm/default.aspx?sc=668072%26hmpgID=62%26bcd=JunestepsfooterNO62>"http://www.freecreditreport.com/pm/default.aspx?sc=668072%26hmpgID=62%26bcd=JunestepsfooterNO62>"http://www.freecreditreport.com/pm/default.aspx?sc=668072%26hmpgID=62%26bcd=JunestepsfooterNO62>"http://www.freecreditreport.com/pm/default.aspx?sc=668072%26hmpgID=62%26bcd=JunestepsfooterNO62>"http://www.freecreditreport.com/pm/default.aspx?sc=668072%26hmpgID=62%26bcd=JunestepsfooterNO62>"http://www.freecreditreport.com/pm/default.aspx?sc=668072%26hmpgID=62%26bcd=JunestepsfooterNO62>"http://www.freecreditreport.com/pm/default.aspx?sc=668072%26hmpgID=62%26bcd=JunestepsfooterNO62>"http://www.freecreditreport.com/pm/default.aspx?sc=668072%26hmpgID=62%26bcd=JunestepsfooterNO62>"http://www.freecreditreport.com/pm/default.aspx?sc=668072%26hmpgID=62%26bcd=JunestepsfooterNO62>"http://www.freecreditreport.com/pm/default.aspx?sc=668072%26bcd=JunestepsfooterNO62>"http://www.freecreditreport.com/pm/default.aspx?sc=668072%26bcd=JunestepsfooterNO62>"http://www.freecreditreport.com/pm/default.aspx?sc=668072%26bcd=JunestepsfooterNO62>"http://www.freecreditreport.com/pm/default.aspx?sc=668072%26bcd=JunestepsfooterNO62>"http://www.freecreditreport.com/pm/default.aspx?sc=668072%26bcd=JunestepsfooterNO62>"http://www.freecreditreport.com/pm/default.aspx?sc=668072%26bcd=JunestepsfooterNO62>"http://www.freecreditreport.com/pm/default.aspx?sc=668072%26bcd=JunestepsfooterNO62>"http://www.freecreditreport.com/pm/default.aspx?sc=668072%26bcd=JunestepsfooterNO62>"http://www.freecreditreport.com/pm/default.aspx.gr=668072%26bcd=JunestepsfooterNO62>"http://www.freecreditreport.gr=6680726bcd=700726bcd=700726bcd=70

From: fmflood@fmfloodcontrol.com
Sent: Tuesday, June 23, 2009 9:31 AM

To: Evans, Craig O MVP
Subject: Flood protection for Fargo

This email was sent on behalf of Richard Solberg (rsolberg@statebanks.com) by the FM Flood Control Group

Mr. Craig Evans:

I am writing in support of a diversion channel as the best option to protect Fargo-Moorhead from the Red River floods.

While several suggestions have been made $\hat{a} \in \text{``}$ all of them with hefty price tags, and none of them satisfying every community or individual with property at stake $\hat{a} \in \text{``}$ I believe the diversion channel is likely the best option for permanent flood protection. A diversion channel is the long, long-term solution we need.

Of course, we have the option to do nothing $\hat{a} \in \mathbb{N}$ not really an option, as $we\hat{a} \in \mathbb{N}$ l continue to have to put up sandbag dikes more frequently than $we\hat{a} \in \mathbb{N}$ all like. An extensive levee system is also on the drawing board, but that solution will significantly devalue properties on the river, adversely affecting our property tax base. Levees will cut through the beautiful river corridor at the heart of our cities; and levees deteriorate and fail. The $\hat{a} \in \mathbb{N}$ plan to contain water in fields has potential but needs testing $\hat{a} \in \mathbb{N}$ and buy-in from area farmers.

Yes, a diversion channel may or may not be a more costly action $\hat{a} \in \text{``}$ but you have only to look at the success stories of West Fargo and Winnipeg to see the positive impact that a diversion channel can bring.

I believe a diversion channel should be the favored solution for permanent flood control in Fargo-Moorhead. Letâ \mathfrak{E}^{m} s make this work and provide our communities the protection they need against further $\hat{a} \in \mathbb{C} = 0$ 0-year $\hat{a} \in \mathbb{C} = 0$ 0-year $\hat{a} \in \mathbb{C} = 0$ 100-year $\hat{a} \in \mathbb{C} = 0$ 10-year $\hat{a$

Sincerely Richard Solberg

From: BruceFurn@aol.com

Sent: Wednesday, June 24, 2009 10:57 AM

To: Evans, Craig O MVP

Subject: (no subject)

Dear Craig,

I would like to add my voice to the growing number of people who are advocating for a significant diversion solution to the increasingly frequent flooding of the Red River.

I have been encouraging officials to search for solutions involving a combination of water storage, dike protection and diversion. Diversion, if feasible, seems like the best long term solution.

I understand the cost versus benefit analysis and how that affects a final decision. I'm simply asking the Corps of Engineers to keep an open mind and investigate all options. I believe that is your normal operating procedure.

Good luck with your effort and thanks for encouraging input for many sources.

Have a Great Day! Bruce Furness

Huge Savings on Popular Laptops only at Dell.com. Shop Now!
<http://pr.atwola.com/promoclk/100126575x1221900667x1201409530/aol?
redir=http:%2F%2Fad.doubleclick.net%2Fclk%3B215910242%3B38350777%3Bf>

From: Mike Moberg [mike_moberg@msn.com]
Sent: Thursday, June 25, 2009 11:52 AM

To: Evans, Craig O MVP
Subject: Evans, Craig O MVP
RE: Question about building

Thanks for the quick response, I will try and get a hold of Keith.

Thanks

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> Subject: RE: Question about building
> Date: Wed, 24 Jun 2009 19:15:51 -0500
> From: craiq.o.evans@usace.army.mil
> To: mike_moberg@msn.com
> CC: berndtk@casscountynd.gov; aaron.m.syder@usace.army.mil
> Mr. Moberg,
> I recommend that you talk to someone at Cass County to see if the
> proposed development is within West Fargo or under county
> jurisdiction. Either way, the developer should be following applicable
> flood-plain regulations to minimize flood risk to new buildings. The
> Corps does not regulate building construction in flood plains unless
> the project involves filling in wetlands, which would require a permit
under Section 404 of the Clean Water Act.
> Our point of contact at Cass County is the County Engineer, Mr. Keith
> Berndt (701-298-2372). I'm sure Mr. Berndt can give you a better
> answer than we can, or at least put you in touch with the right
person.
> Thanks,
> Craig Evans
> Senior Planner & Project Manager
> St. Paul District
> U.S. Army Corps of Engineers
> Office: (651) 290-5594
> Mobile: (612) 518-3413
> e-mail: craig.o.evans@usace.army.mil
> ----Original Message----
> From: Mike Moberg [mailto:mike moberg@msn.com]
> Sent: Wednesday, June 24, 2009 6:13 PM
> To: Evans, Craig O MVP; aaron.m.syder@usace.army.mil
> Subject: Question about building
> Craig or Aaron, I got your names from the Fargo-Moorhead Feasibility
> study web site, I don't know who to contact from the Corp about my
> question, so I thought I would start with you.
> I live north of west fargo, just outside the diversion, and in 2009 my
> house and neigborhood was surrounded by water for 25 days. In the past
> 12 years I have had to ring dike my house 4 times, and I don't even
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> live on the Sheyenne river.
> My question or concern is that the city of West Fargo is considering
> doing a development of 240 homes out by me, on the outside of the
> diversion and if the development is not done correctly this
> developement is going to have problems during the next flood and it
might also impact my flooding problem.
> So I am wondering how we go about making sure that the city of West
> Fargo is doing this correctly and not impacting the existing flooding
> problem we already have.
> If you are not the correct people to talk to could you please give a
> contact person.
> Thanks,
> Mike Moberg
> Microsoft brings you a new way to search the web. Try Bing(tm) now
> <http://www.bing.com?form=MFEHPG&publ=WLHMTAG&crea=TEXT_MFEHPG_Core_ta
> gline_t
> ry bing_1x1>
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Windows Live™ SkyDrive™: Get 25 GB of free online storage. Get it on your BlackBerry or iPhone. http://windowslive.com/online/skydrive? ocid=TXT_TAGLM_WL_SD_25GB_062009>

From: fmflood@fmfloodcontrol.com
Sent: fmflood@fmfloodcontrol.com
Monday, June 29, 2009 12:09 PM

To: Evans, Craig O MVP
Subject: Flood protection for Fargo

This email was sent on behalf of Steve and Julie Boe (sboe@cableone.net) by the FM Flood Control Group

Mr. Craig Evans:

We need a 100 year solution! The only method of flood protection that is sure to work is a diversion. Permanent levees could fail, especially at the extreme predictions of possible heights that were projected for F-M in the 2009 flood fight. Levees pose a greater risk of a catastrophic failure. The 2009 flood made us realize that a flood over 45 feet is possible. Homes have been destroyed because they were sliding into the river, the old Trollwood and Edgewood clubhouse were sliding into the river, roads, dikes, etc have been damaged by the unstable soil along the river. Building anything 50 plus feet above the river bed and on the banks of the Red River is sure to fail at some point. It would not be necessary to reroute all of the water in the Red River around the towns. The Winnipeg diversion has worked great and protected their city in 1997. The floodway capacity was at 60,000 cfs in 1997. The original diversion price adjusted to today was \$350 to \$500 million.

In F-M the river is about 100 feet wide, in Winnipeg the river is about 450 feet wide (nearly 5 times as wide). The red river valley is full of ditches (drains). The diversion would just be a bigger ditch. A bottom width of about 50 feet appears to be what would be required based on the 2009 flow. The flow at Fargo was 29,100 cubic feet per second at 40.82 feet this spring. The cost with a smaller diversion could be significantly reduced and should give it a favorable cost benefit ratio.

The proposal of the Corps to start at the Wild Rice River and end way north of Harwood is very good. The diversion would offer better protection from overland flooding on the ND side of the river. Property will have to be taken by eminent domain; either homes along the river and drains for dikes and flood walls etc., or farmland for the diversion. The \$909 million for the diversion would seem to have much greater benefits than the levees. We need to find a way to get a favorable cost benefit ratio or find another way to fund the diversion It should be selected immediately as the preferred method. Sincerely Steve and Julie Boe

From: fmflood@fmfloodcontrol.com
Sent: fmflood@fmfloodcontrol.com
Monday, June 29, 2009 4:47 AM

To: Evans, Craig O MVP

Subject: Flood protection for Moorhead

This email was sent on behalf of W Bolin (wildbill918@hotmail.com) by the FM Flood Control Group

Mr. Craig Evans:

We need a 100 year solution! The only method of flood protection that is sure to work is a diversion. Permanent levees could fail, especially at the extreme predictions of possible heights that were projected for F-M in the 2009 flood fight. Levees pose a greater risk of a catastrophic failure. The 2009 flood made us realize that a flood over 45 feet is possible. Homes have been destroyed because they were sliding into the river, the old Trollwood and Edgewood clubhouse were sliding into the river, roads, dikes, etc have been damaged by the unstable soil along the river. Building anything 50 plus feet above the river bed and on the banks of the Red River is sure to fail at some point. It would not be necessary to reroute all of the water in the Red River around the towns. The Winnipeg diversion has worked great and protected their city in 1997. The floodway capacity was at 60,000 cfs in 1997. The original diversion price adjusted to today was \$350 to \$500 million.

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The proposal of the Corps to start at the Wild Rice River and end way north of Harwood is very good. The diversion would offer better protection from overland flooding on the ND side of the river. Property will have to be taken by eminent domain; either homes along the river and drains for dikes and flood walls etc., or farmland for the diversion. The \$909 million for the diversion would seem to have much greater benefits than the levees. We need to find a way to get a favorable cost benefit ratio or find another way to fund the diversion It should be selected immediately as the preferred method. Sincerely W Bolin

From: fmflood@fmfloodcontrol.com
Sent: fmflood@fmfloodcontrol.com
Monday, June 29, 2009 4:25 AM

To: Evans, Craig O MVP
Subject: Flood protection for Fargo

This email was sent on behalf of David Cossette (dcossett@midamsteel.com) by the FM Flood Control Group

Mr. Craig Evans:

We need a 100 year solution! The only method of flood protection that is sure to work is a diversion. Permanent levees could fail, especially at the extreme predictions of possible heights that were projected for F-M in the 2009 flood fight. Levees pose a greater risk of a catastrophic failure. The 2009 flood made us realize that a flood over 45 feet is possible. Homes have been destroyed because they were sliding into the river, the old Trollwood and Edgewood clubhouse were sliding into the river, roads, dikes, etc have been damaged by the unstable soil along the river. Building anything 50 plus feet above the river bed and on the banks of the Red River is sure to fail at some point. It would not be necessary to reroute all of the water in the Red River around the towns. The Winnipeg diversion has worked great and protected their city in 1997. The floodway capacity was at 60,000 cfs in 1997. The original diversion price adjusted to today was \$350 to \$500 million.

In F-M the river is about 100 feet wide, in Winnipeg the river is about 450 feet wide (nearly 5 times as wide). The red river valley is full of ditches (drains). The diversion would just be a bigger ditch. A bottom width of about 50 feet appears to be what would be required based on the 2009 flow. The flow at Fargo was 29,100 cubic feet per second at 40.82 feet this spring. The cost with a smaller diversion could be significantly reduced and should give it a favorable cost benefit ratio.

The proposal of the Corps to start at the Wild Rice River and end way north of Harwood is very good. The diversion would offer better protection from overland flooding on the ND side of the river. Property will have to be taken by eminent domain; either homes along the river and drains for dikes and flood walls etc., or farmland for the diversion. The \$909 million for the diversion would seem to have much greater benefits than the levees. We need to find a way to get a favorable cost benefit ratio or find another way to fund the diversion It should be selected immediately as the preferred method. Sincerely David Cossette

From: ROGER FINCH [finchro@msn.com]
Sent: Monday, June 29, 2009 7:29 PM

To: Evans, Craig O MVP

Subject: Flood control

Why not dredge the Red River deeper and wider? Over the years it has filled in with sediment, trees, etc. To avoid having the banks sink into the river after dredging, you could cement the bottom and sides. It may not be THE answer, but every bit helps!

In the summer time when the river is low, you could dam off say 1/2 mile at a time. You would have two dams, one on each end of the construction site. You could pump the water from the south end, past the construction area, and release it down stream, past the north dam. After dredging and cementing each section, you release the dam to the South. The dam to the North now becomes the back up dam and you billed another north dam 1/2 mile further north etc.

This way you don't have to acquire additional land or right of way. On Modern Marvels, I have watched them dam up oceans in order to build bridges. The Red River should be a piece a cake!

Respectfully submitted, Roger Finch Moorhead, MN.

Windows Live™ SkyDrive™: Get 25 GB of free online storage. Get it on your BlackBerry or iPhone. http://windowslive.com/online/skydrive? ocid=TXT_TAGLM_WL_SD_25GB_062009>

From: fmflood@fmfloodcontrol.com
Sent: fmflood@fmfloodcontrol.com
Monday, June 29, 2009 11:59 PM

To: Evans, Craig O MVP
Subject: Flood protection for Fargo

This email was sent on behalf of Karrie Ann Halvorson (khalvorson@facnd.com) by the FM Flood Control Group

Mr. Craig Evans:

We need a 100 year solution! The only method of flood protection that is sure to work is a diversion. Permanent levees could fail, especially at the extreme predictions of possible heights that were projected for F-M in the 2009 flood fight. Levees pose a greater risk of a catastrophic failure. The 2009 flood made us realize that a flood over 45 feet is possible. Homes have been destroyed because they were sliding into the river, the old Trollwood and Edgewood clubhouse were sliding into the river, roads, dikes, etc have been damaged by the unstable soil along the river. Building anything 50 plus feet above the river bed and on the banks of the Red River is sure to fail at some point. It would not be necessary to reroute all of the water in the Red River around the towns. The Winnipeg diversion has worked great and protected their city in 1997. The floodway capacity was at 60,000 cfs in 1997. The original diversion price adjusted to today was \$350 to \$500 million.

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Karrie Ann Halvorson

From: fmflood@fmfloodcontrol.com
Sent: Monday, June 29, 2009 5:49 AM

To: Evans, Craig O MVP
Subject: Flood protection for Fargo

This email was sent on behalf of Jane Schock (jschock@nodakmutual.com) by the FM Flood Control Group

Mr. Craig Evans:

We need a 100 year solution! The only method of flood protection that is sure to work is a diversion. Permanent levees could fail, especially at the extreme predictions of possible heights that were projected for F-M in the 2009 flood fight. Levees pose a greater risk of a catastrophic failure. The 2009 flood made us realize that a flood over 45 feet is possible. Homes have been destroyed because they were sliding into the river, the old Trollwood and Edgewood clubhouse were sliding into the river, roads, dikes, etc have been damaged by the unstable soil along the river. Building anything 50 plus feet above the river bed and on the banks of the Red River is sure to fail at some point. It would not be necessary to reroute all of the water in the Red River around the towns. The Winnipeg diversion has worked great and protected their city in 1997. The floodway capacity was at 60,000 cfs in 1997. The original diversion price adjusted to today was \$350 to \$500 million.

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From: fmflood@fmfloodcontrol.com
Sent: fmflood@fmfloodcontrol.com
Monday, June 29, 2009 7:58 AM

To: Evans, Craig O MVP

Subject: Flood protection for Moorhead

This email was sent on behalf of Joe Tillman (josephtillman@live.com) by the FM Flood Control Group

Mr. Craig Evans:

We need a 100 year solution! The only method of flood protection that is sure to work is a diversion. Permanent levees could fail, especially at the extreme predictions of possible heights that were projected for F-M in the 2009 flood fight. Levees pose a greater risk of a catastrophic failure. The 2009 flood made us realize that a flood over 45 feet is possible. Homes have been destroyed because they were sliding into the river, the old Trollwood and Edgewood clubhouse were sliding into the river, roads, dikes, etc have been damaged by the unstable soil along the river. Building anything 50 plus feet above the river bed and on the banks of the Red River is sure to fail at some point. It would not be necessary to reroute all of the water in the Red River around the towns. The Winnipeg diversion has worked great and protected their city in 1997. The floodway capacity was at 60,000 cfs in 1997. The original diversion price adjusted to today was \$350 to \$500 million.

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From: fmflood@fmfloodcontrol.com
Sent: fmglood@fmfloodcontrol.com
Tuesday, June 30, 2009 2:23 AM

To: Evans, Craig O MVP Subject: Flood protection for Fargo

This email was sent on behalf of Steve Altendorf (Steve_Altendorf@msn.com) by the FM Flood Control Group

Mr. Craig Evans:

We need a 100 year solution! The only method of flood protection that is sure to work is a diversion. Permanent levees could fail, especially at the extreme predictions of possible heights that were projected for F-M in the 2009 flood fight. Levees pose a greater risk of a catastrophic failure. The 2009 flood made us realize that a flood over 45 feet is possible. Homes have been destroyed because they were sliding into the river, the old Trollwood and Edgewood clubhouse were sliding into the river, roads, dikes, etc have been damaged by the unstable soil along the river. Building anything 50 plus feet above the river bed and on the banks of the Red River is sure to fail at some point. It would not be necessary to reroute all of the water in the Red River around the towns. The Winnipeg diversion has worked great and protected their city in 1997. The floodway capacity was at 60,000 cfs in 1997. The original diversion price adjusted to today was \$350 to \$500 million.

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Steve Altendorf

From: fmflood@fmfloodcontrol.com
Sent: fmflood@fmfloodcontrol.com
Tuesday, June 30, 2009 2:07 AM

To: Evans, Craig O MVP
Subject: Flood protection for Fargo

This email was sent on behalf of Glenn A Bender (glenn@van-raden.com) by the FM Flood Control Group

Mr. Craig Evans:

We need a 100 year solution! The only method of flood protection that is sure to work is a diversion. Permanent levees could fail, especially at the extreme predictions of possible heights that were projected for F-M in the 2009 flood fight. Levees pose a greater risk of a catastrophic failure. The 2009 flood made us realize that a flood over 45 feet is possible. Homes have been destroyed because they were sliding into the river, the old Trollwood and Edgewood clubhouse were sliding into the river, roads, dikes, etc have been damaged by the unstable soil along the river. Building anything 50 plus feet above the river bed and on the banks of the Red River is sure to fail at some point. It would not be necessary to reroute all of the water in the Red River around the towns. The Winnipeg diversion has worked great and protected their city in 1997. The floodway capacity was at 60,000 cfs in 1997. The original diversion price adjusted to today was \$350 to \$500 million.

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Glenn A Bender

From: Bredell Brad and Michelle [bredellmic@yahoo.com]

Sent: Tuesday, June 30, 2009 8:04 PM

To: Evans, Craig O MVP; Snyder, Aaron M MVP

Cc: fmflood@fmfloodcontrol.com

Subject: flood control

Hi, I wanted to let you know that I support a diversion for the Fargo-Moorhead area. A dike system is a band aid that will fail in time. Wasn't the only major dike breach a PERMANANT flood wall at Oak Grove? Let's do it right the first time.

Thanks,

Brad Bredell Fargo ND 701-306-3258

From: CRONIN PATRICK [pdcronin@ideaone.net]

Sent: Tuesday, June 30, 2009 2:29 PM

To: Evans, Craig O MVP; Snyder, Aaron M MVP;

dwalaker@cityoffargo.com

Cc: fmflood@fmfloodcontrol.com

Subject: diversion proposal

To whom it may concern:

I am a ND resident but live outside of Fargo. In fact, I live in the area between West Fargo and Harwood where the Sheyenne Diversion reenters the river channel. Our area has seen many floods in recent years because of high levels on the Red, Sheyenne, Maple and Rush rivers.

The Sheyenne Diversion works great for West Fargo and is a good example of how well a diversion functions. Even with the higher Baldhill Dam and the addition of the Maple River Dam my area still flooded. It is unfortunate that the Sheyenne Diversion did not go further north so that it would protect my home as well my neighbors and those in and beyond Harwood.

I am in total agreement with the group of people proposing a ND diversion channel west of the city of Fargo. I have several reasons to support thier position:

- 1) A large amount of the water entering the Red River channel comes from the west. It is logical to keep it on the west side instead of going the long way around the city.
- 2) Keeping the diversion in North Dakota limits the amount of political infighting that will happen when water crosses any type of border.
- 3) In addition to the Wild Rice river a west side channel could collect water from the Sheyenne, Maple and Rush. It offers a greater choice of design and function.
- 4) Being able to provide solutions to more rivers brings more people on board with the project. I don't think that many people outside of Fargo are excited about paying for Fargo's flood control with a sales tax. I know many people in my area would be in full support of the taxes and project if it offered diversion like protection for us. I also think that people would be more comfortable about helping drain Devils Lake through the Sheyenne if there was diversion protection.

Thanks for all your effort in finding solutions to this problem.

Patrick Cronin 313 Ramona Ave West Fargo, ND 58078

(701)281-1090

From: fmflood@fmfloodcontrol.com
Sent: Tuesday, June 30, 2009 9:30 AM

To: Evans, Craig O MVP
Subject: Flood protection for Fargo

This email was sent on behalf of Tom Fetch (Tom.Fetch@agr.gc.ca) by the FM Flood Control Group

Mr. Craig Evans:

I live in Winnipeg currently, but grew up in Fargo and have property near Hickson. I have been flooded out twice, and nearly flooded two other times since 1989. Clearly the drainage system has changed dramatically in the past two decades and the river levels fluctuate very quickly even with relatively low precipitation and snow amounts.

Although Winnipeg is mainly protected by the diversion and this appears to be the main agenda topic for the fmfloodcontrol website, I would also propose two other methods that seem to be much less expensive and have merit in lowering flooding. One is the "waffle concept" that has been researched in detail by scientists at the University of North Dakota in Grand Forks. Clearly we can use the existing ditches by controlling runoff through the culverts in the spring. In combination with other methods, this would be a cheap and quick fix to do. A second method that I propose is a retention strategy that could use low lying farmland adjacent to major rivers to hold water. If low lying land adjacent to the Red River was purchased and a series of perpendicular ditching was cut (20-30 feet deep and perhaps the same width extending several hundred feet) using large backhoes or D5 Caterpillar equipment, water could be diverted and held, and pumped out later. This would be conceptually similar to a diversion, except that these trenches could be cut next to the river to hold the water and there would be no need to raise or construct new bridges or roadways. A primary cost item in the diversion in Winnipeg is that many bridges and railways had to be built. Sincerely Tom Fetch

From: fmflood@fmfloodcontrol.com
Sent: Tuesday, June 30, 2009 11:55 PM

To: Evans, Craig O MVP
Subject: Flood protection for Fargo

This email was sent on behalf of Jon Forknell (jforknell@abs-usa.com) by the FM Flood Control Group

Mr. Craig Evans:
To Whom It May Concern,

As a resident of North Dakota, I am in strong support of the recently-presented diversion that would run through North Dakota. The only method of flood protection that is sure to work is a diversion. Permanent levees can fail, especially at the extreme predictions of possible heights that were projected for F-M in the 2009 flood fight. Levees pose a greater risk of a catastrophic failure.

The 2009 flood made us realize that a flood over 45 feet is possible. Homes have been destroyed because they were sliding into the river, the old Trollwood and Edgewood clubhouse were sliding into the river, roads, dikes, etc have been damaged by the unstable soil along the river. Building anything 50 plus feet above the river bed and on the banks of the Red River is sure to fail at some point. It would not be necessary to reroute all of the water in the Red River around the towns. The Winnipeg diversion has worked great and protected their city in 1997. The floodway capacity was at 60,000 cfs in 1997. The original diversion price adjusted to today was \$350 to \$500 million.

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Sincerely,

Jon Forknell 3726 River Drive S E-mail: jforknell@abs-usa.com Sincerely Jon Forknell

From: Paul Hannaher [PHannaher@hannahers.com]

Sent: Tuesday, June 30, 2009 9:07 AM

To: Evans, Craig O MVP; Snyder, Aaron M MVP;

DWalaker@cityoffargo.com; tim.pawlenty@state.mn.us;

mark.voxland@ci.moorhead.mn.us; rep.morrie.lanning@house.mn

Cc: fmflood@fmfloodcontrol.com

Subject: My support for more study of a diversion for the Fargo Moorhead

region.

Good Morning Gentlemen,

I am writing this note to you today to encourage you to consider a diversion as opposed to a levee system to protect the Fargo-Moorhead area.

The facts are in and my concerns are focused on the long term reliability of a levee system given that we have a soil structure that really has no structure. In my opinion even if we put pilings down to bedrock to support a levee system the risk will always be there for wash outs due to water pressure between the pilings. Those weak points would not manifest until a flood occurs again and would put the city at risk.

This diversion plan also includes more of our friends and neighbors in surrounding smaller towns.

The city leaders of Fargo-Moorhead have proven to be a great team that makes smart decisions. We will all have to live with those decisions. Thank you for your service.

My opinion being shared; let me thank you for your team effort to keep that river tamed this spring. We don't want to EVER do that again.

Sincerely,

Paul

Paul Hannaher

Vice President

Hannaher's and OFUSA -Fargo

4324 20th Ave SW

Fargo, ND 58103

701.277.7222

www.hannahers.com <http://www.hannahers.com/>

P Please consider the environment before printing this email.

From: fmflood@fmfloodcontrol.com
Sent: Tuesday, June 30, 2009 12:57 AM

To: Evans, Craig O MVP

Subject: Flood protection for Moorhead

This email was sent on behalf of Bob J Hegg (bobhegg@cableone.net) by the FM Flood Control Group

Mr. Craig Evans:

We need a 100 year solution! The only method of flood protection that is sure to work is a diversion. Permanent levees could fail, especially at the extreme predictions of possible heights that were projected for F-M in the 2009 flood fight. Levees pose a greater risk of a catastrophic failure. The 2009 flood made us realize that a flood over 45 feet is possible. Homes have been destroyed because they were sliding into the river, the old Trollwood and Edgewood clubhouse were sliding into the river, roads, dikes, etc have been damaged by the unstable soil along the river. Building anything 50 plus feet above the river bed and on the banks of the Red River is sure to fail at some point. It would not be necessary to reroute all of the water in the Red River around the towns. The Winnipeg diversion has worked great and protected their city in 1997. The floodway capacity was at 60,000 cfs in 1997. The original diversion price adjusted to today was \$350 to \$500 million.

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From: fmflood@fmfloodcontrol.com
Sent: fmflood@fmfloodcontrol.com
Tuesday, June 30, 2009 6:26 AM

To: Evans, Craig O MVP
Subject: Flood protection for Fargo

This email was sent on behalf of Mylon Hoefs (mlhoefs@cableone.net) by the FM Flood Control Group

Mr. Craig Evans:

We need a 100 year solution! The only method of flood protection that is sure to work is a diversion. Permanent levees could fail, especially at the extreme predictions of possible heights that were projected for F-M in the 2009 flood fight. Levees pose a greater risk of a catastrophic failure. The 2009 flood made us realize that a flood over 45 feet is possible. Homes have been destroyed because they were sliding into the river, the old Trollwood and Edgewood clubhouse were sliding into the river, roads, dikes, etc have been damaged by the unstable soil along the river. Building anything 50 plus feet above the river bed and on the banks of the Red River is sure to fail at some point. It would not be necessary to reroute all of the water in the Red River around the towns. The Winnipeg diversion has worked great and protected their city in 1997. The floodway capacity was at 60,000 cfs in 1997. The original diversion price adjusted to today was \$350 to \$500 million.

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From: fmflood@fmfloodcontrol.com
Sent: Tuesday, June 30, 2009 2:27 AM

To: Evans, Craig O MVP

Subject: Flood protection for Moorhead

This email was sent on behalf of Carole Mitchell (MitchCarole@aol.com) by the FM Flood Control Group

Mr. Craig Evans:

We need a 100 year solution! The only method of flood protection that is sure to work is a diversion. Permanent levees could fail, especially at the extreme predictions of possible heights that were projected for F-M in the 2009 flood fight. Levees pose a greater risk of a catastrophic failure. The 2009 flood made us realize that a flood over 45 feet is possible. Homes have been destroyed because they were sliding into the river, the old Trollwood and Edgewood clubhouse were sliding into the river, roads, dikes, etc have been damaged by the unstable soil along the river. Building anything 50 plus feet above the river bed and on the banks of the Red River is sure to fail at some point. It would not be necessary to reroute all of the water in the Red River around the towns. The Winnipeg diversion has worked great and protected their city in 1997. The floodway capacity was at 60,000 cfs in 1997. The original diversion price adjusted to today was \$350 to \$500 million.

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I have lived along the river for the past 35 years and twenty seven of those years there were only 3 floods, now since 97 it seems like every other year there is concern for our towns and property. Most people cannot take the stress or the loss of there property year after year forceing them to look for alternate places to live. This diversion is the only thing that makes sense to me, diking only raises the levels beside the worry of a breaching. I feel the cor of engineers should take a serious look at this proposal and consider the long range of PERMANET flood control.

Sincerely Carole Mitchell

From: fmflood@fmfloodcontrol.com
Sent: fmglood@fmfloodcontrol.com
Tuesday, June 30, 2009 3:59 AM

To: Evans, Craig O MVP Subject: Flood protection for Fargo

This email was sent on behalf of Brenda Moen (bkmslade@gmail.com) by the FM Flood Control Group

Mr. Craig Evans:

We need a 100 year solution! The only method of flood protection that is sure to work is a diversion. Permanent levees could fail, especially at the extreme predictions of possible heights that were projected for F-M in the 2009 flood fight. Levees pose a greater risk of a catastrophic failure. The 2009 flood made us realize that a flood over 45 feet is possible. Homes have been destroyed because they were sliding into the river, the old Trollwood and Edgewood clubhouse were sliding into the river, roads, dikes, etc have been damaged by the unstable soil along the river. Building anything 50 plus feet above the river bed and on the banks of the Red River is sure to fail at some point. It would not be necessary to reroute all of the water in the Red River around the towns. The Winnipeg diversion has worked great and protected their city in 1997. The floodway capacity was at 60,000 cfs in 1997. The original diversion price adjusted to today was \$350 to \$500 million.

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From: dan passolt [danpassolt@yahoo.com]
Sent: Tuesday, June 30, 2009 10:34 PM

To: governor@nd.gov; tim.pawlenty@state.mn.us;

DWalaker@cityoffargo.com; mark.voxland@ci.moorhead.mn.us; rep.morrie.lanning@house.mn; Evans, Craig O MVP; Snyder, Aaron

M MVP

Subject: flood control-diversion

Please put the diversion project(Western Diversion) that ex-Gov.Schaefer is promoting as your #1 Option to protect FM and surrounding area. I have lived and worked in this area for over 30 years and prior to that was a student at UND. I've experienced several floods thru-out that time and experienced the trauma the area goes thru during and after the flood. In 1997-99 I was the Const. Mgr on the Grand Forks 1st and 2nd Congressional District 189 New Home Construction Project. I was fortunate to get an inside look at what it takes to re-build a city(it's not something a city should have to go thru and it's not fun). I'm hoping my current home of Fargo will never have to go thru this. I've read several articles about some of the alternatives and my current house is located in an area where they were proposing a dike in my back yard even before the flood of 2009.

It's a good thing the proposed dike wasn't built cuz it would've been too low. I also own a business in West Fargo and have experienced how the Sheyenne diversion works during a flood. It's a huge selling point to people moving to the area when you can say if they buy in West Fargo they are protected from the flood waters. It works-we all know that! It's a managable system that isn't complex! It protects all of Horace and West Fargo!

Since the Sales Tax has been approved a project will be funded by area wide buyers when they shop, and it only seems fair to then protect area wide with a diversion and not just dikes here and there. You need to think of the future, the managability, the complexity, the magnitude and the fairness of any system you pick. I believe the Western Diversion is the answer to these issues please make it your #1 Option.

Dan Passolt Homeland Developers 701-219-0150

From: fmflood@fmfloodcontrol.com
Sent: Tuesday, June 30, 2009 1:52 AM

To: Evans, Craig O MVP Subject: Flood protection for Fargo

This email was sent on behalf of Juergen Pfeiffer (juergen.pfeiffer@yahoo.com) by the FM Flood Control Group

Mr. Craig Evans:

We need a 100 year solution! The only method of flood protection that is sure to work is a diversion. Permanent levees could fail, especially at the extreme predictions of possible heights that were projected for F-M in the 2009 flood fight. Levees pose a greater risk of a catastrophic failure. The 2009 flood made us realize that a flood over 45 feet is possible. Homes have been destroyed because they were sliding into the river, the old Trollwood and Edgewood clubhouse were sliding into the river, roads, dikes, etc have been damaged by the unstable soil along the river. Building anything 50 plus feet above the river bed and on the banks of the Red River is sure to fail at some point. It would not be necessary to reroute all of the water in the Red River around the towns. The Winnipeg diversion has worked great and protected their city in 1997. The floodway capacity was at 60,000 cfs in 1997. The original diversion price adjusted to today was \$350 to \$500 million.

In F-M the river is about 100 feet wide, in Winnipeg the river is about 450 feet wide (nearly 5 times as wide). The red river valley is full of ditches (drains). The diversion would just be a bigger ditch. A bottom width of about 50 feet appears to be what would be required based on the 2009 flow. The flow at Fargo was 29,100 cubic feet per second at 40.82 feet this spring. The cost with a smaller diversion could be significantly reduced and should give it a favorable cost benefit ratio.

The proposal of the Corps to start at the Wild Rice River and end way north of Harwood is very good. The diversion would offer better protection from overland flooding on the ND side of the river. Property will have to be taken by eminent domain; either homes along the river and drains for dikes and flood walls etc., or farmland for the diversion. The \$909 million for the diversion would seem to have much greater benefits than the levees. We need to find a way to get a favorable cost benefit ratio or find another way to fund the diversion It should be selected immediately as the preferred method. It will only take the prevention of one catastrophic flood to make this diversion pay for itself. A well- build diversion will provide peace of mind every spring for generations to come and that cannot be expressed in dollars. The people of Fargo-Moorhead and surrounding communities will be proud today and into the future for a wise and overdue decision being made today by leaders in our community. Sincerely

Juergen Pfeiffer

From: fmflood@fmfloodcontrol.com
Sent: fmflood@fmfloodcontrol.com
Tuesday, June 30, 2009 1:14 AM

To: Evans, Craig O MVP
Subject: Flood protection for Fargo

This email was sent on behalf of Kory Werlinger (kjwerli@yahoo.com) by the FM Flood Control Group

Mr. Craig Evans:

We need a 100 year solution! The only method of flood protection that is sure to work is a diversion. Permanent levees could fail, especially at the extreme predictions of possible heights that were projected for F-M in the 2009 flood fight. Levees pose a greater risk of a catastrophic failure. The 2009 flood made us realize that a flood over 45 feet is possible. Homes have been destroyed because they were sliding into the river, the old Trollwood and Edgewood clubhouse were sliding into the river, roads, dikes, etc have been damaged by the unstable soil along the river. Building anything 50 plus feet above the river bed and on the banks of the Red River is sure to fail at some point. It would not be necessary to reroute all of the water in the Red River around the towns. The Winnipeg diversion has worked great and protected their city in 1997. The floodway capacity was at 60,000 cfs in 1997. The original diversion price adjusted to today was \$350 to \$500 million.

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The proposal of the Corps to start at the Wild Rice River and end way north of Harwood is very good. The diversion would offer better protection from overland flooding on the ND side of the river. Property will have to be taken by eminent domain; either homes along the river and drains for dikes and flood walls etc., or farmland for the diversion. The \$909 million for the diversion would seem to have much greater benefits than the levees. We need to find a way to get a favorable cost benefit ratio or find another way to fund the diversion It should be selected immediately as the preferred method. Sincerely

Kory Werlinger

From: Jason Gates [jason.gates@fargoautomation.com]

Sent: Wednesday, July 01, 2009 11:08 AM

To: Snyder, Aaron M MVP

Subject: Fargo Moorhead Flood Protection

Mr. Snyder,

I own a home in Fargo, and like many others in the community, I am concerned that a dike/levy solution will not provide the necessary protection that our cities require. I am sure you are aware, the best way to ensure our community is not faced with billions of dollars in flood damages when a 42-43 foot flood hits is a diversion through Minnesota or North Dakota.

If the local, state, and federal governments are going to spend upwards of \$750,000,000 on a flood protection system, then this system must offer a 99.9% assurance that it will not fail. I do not see how a levy system can offer this assurance, especially considering the unpredictable nature of the Red River. For instance, how can dikes or levies protect to 45 feet when the automobile and railroad bridges downtown start holding back water at 41 feet? Because of the topography of the valley, it makes no sense to force the water higher through town, a flood marginally higher than the one we had this spring would have a high probability of disaster, all it takes is one failure in the system and large portions of the city become submerged. A diversion can keep the river well below 40 feet in even the worst flood, and the damage would be minimal in the event of a failure.

Economically, the region has a lot to gain from a diversion; property values and recreational use through the Red River corridor would benefit. A diversion system can be designed that not only protects against major floods, but can keep the river below 25 feet through town during "nuisance" floods as well. The area's best parks, golf courses, and trails begin taking on damage at this level. Conversely, a dike/levy project will require many riverside property buy outs, lessen the recreational and visual appeal of the river, and it does not provide a solution for the "nuisance" floods that have become so common during the summer months.

Please take these thoughts into consideration as you analyze the various flood control options for our community.

Thank You,

Jason Gates, PE

From: fmflood@fmfloodcontrol.com
Sent: wednesday, July 01, 2009 1:25 AM

To: Evans, Craig O MVP **Subject:** Flood protection for Fargo

This email was sent on behalf of Thomas C Ortmeier, MD (ortmeiert@yahoo.com) by the FM Flood Control Group

Mr. Craig Evans:

We need a 100 year solution! The only method of flood protection that is sure to work is a diversion. Permanent levees could fail, especially at the extreme predictions of possible heights that were projected for F-M in the 2009 flood fight. Levees pose a greater risk of a catastrophic failure. The 2009 flood made us realize that a flood over 45 feet is possible. Homes have been destroyed because they were sliding into the river, the old Trollwood and Edgewood clubhouse were sliding into the river, roads, dikes, etc have been damaged by the unstable soil along the river. Building anything 50 plus feet above the river bed and on the banks of the Red River is sure to fail at some point. It would not be necessary to reroute all of the water in the Red River around the towns. The Winnipeg diversion has worked great and protected their city in 1997. The floodway capacity was at 60,000 cfs in 1997. The original diversion price adjusted to today was \$350 to \$500 million.

In F-M the river is about 100 feet wide, in Winnipeg the river is about 450 feet wide (nearly 5 times as wide). The red river valley is full of ditches (drains). The diversion would just be a bigger ditch. A bottom width of about 50 feet appears to be what would be required based on the 2009 flow. The flow at Fargo was 29,100 cubic feet per second at 40.82 feet this spring. The cost with a smaller diversion could be significantly reduced and should give it a favorable cost benefit ratio.

The proposal of the Corps to start at the Wild Rice River and end way north of Harwood is very good. The diversion would offer better protection from overland flooding on the ND side of the river. Property will have to be taken by eminent domain; either homes along the river and drains for dikes and flood walls etc., or farmland for the diversion. The \$909 million for the diversion would seem to have much greater benefits than the levees. We need to find a way to get a favorable cost benefit ratio or find another way to fund the diversion It should be selected immediately as the preferred method. It seems only logical to use the form of a diversion ditch rather than levees to avoid catastrophic failure due to breach. Using the ground for walls instead of artificial levees would give a much greater margin of safety and protection. In addition, a levee system will only funnel a higher volume of water THROUGH the communities where it can do the most damage if a breach occurs. If you review photos from the 2009 Fargo flood crest, the water was already lapping at the bottom of the Veterans Memorial Bridge. Levees would only make that problem worse and pose a larger threat to Fargo\'s major downtown infrastructure. I fully support the ND diversion project.

Sincerely Thomas C Ortmeier, MD

From: fmflood@fmfloodcontrol.com
Sent: fmflood@fmfloodcontrol.com
Thursday, July 02, 2009 2:57 PM

To: Evans, Craig O MVP

Subject: Flood protection for Moorhead

This email was sent on behalf of Laura Dickerson (mhddickerson@yahoo.com) by the FM Flood Control Group

Mr. Craig Evans:

We need a 100 year solution! The only method of flood protection that is sure to work is a diversion. Permanent levees could fail, especially at the extreme predictions of possible heights that were projected for F-M in the 2009 flood fight. Levees pose a greater risk of a catastrophic failure. The 2009 flood made us realize that a flood over 45 feet is possible. Homes have been destroyed because they were sliding into the river, the old Trollwood and Edgewood clubhouse were sliding into the river, roads, dikes, etc have been damaged by the unstable soil along the river. Building anything 50 plus feet above the river bed and on the banks of the Red River is sure to fail at some point. It would not be necessary to reroute all of the water in the Red River around the towns. The Winnipeg diversion has worked great and protected their city in 1997. The floodway capacity was at 60,000 cfs in 1997. The original diversion price adjusted to today was \$350 to \$500 million.

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From: fmflood@fmfloodcontrol.com
Sent: Sunday, July 12, 2009 12:42 PM

To: Evans, Craig O MVP
Subject: Flood protection for Fargo

This email was sent on behalf of Natalie Dufault (personatali@ymail.com) by the FM Flood Control Group

Mr. Craig Evans:

We need a 100 year solution! The only method of flood protection that is sure to work is a diversion. Permanent levees could fail, especially at the extreme predictions of possible heights that were projected for F-M in the 2009 flood fight. Levees pose a greater risk of a catastrophic failure. The 2009 flood made us realize that a flood over 45 feet is possible. Homes have been destroyed because they were sliding into the river, the old Trollwood and Edgewood clubhouse were sliding into the river, roads, dikes, etc have been damaged by the unstable soil along the river. Building anything 50 plus feet above the river bed and on the banks of the Red River is sure to fail at some point. It would not be necessary to reroute all of the water in the Red River around the towns. The Winnipeg diversion has worked great and protected their city in 1997. The floodway capacity was at 60,000 cfs in 1997. The original diversion price adjusted to today was \$350 to \$500 million.

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I live in West Fargo and it has already proved invaluable that we have a diversionary channel. It\'s just really too bad that the rest of the city has not had this done yet. I really hope that this goes through, as it is necessary for all of our livelihood...

Sincerely,

Natalie Dufault Sincerely

From: fmflood@fmfloodcontrol.com Sent: Tuesday, July 14, 2009 11:50 PM

Evans, Craig O MVP To: Subject: Flood protection for Fargo

This email was sent on behalf of Karen (Engler) by the FM Flood Control Group

Mr. Craiq Evans:

We need a 100 year solution! The only method of flood protection that is sure to work is a diversion. Permanent levees could fail, especially at the extreme predictions of possible heights that were projected for F-M in the 2009 flood fight. Levees pose a greater risk of a catastrophic failure. The 2009 flood made us realize that a flood over 45 feet is possible. Homes have been destroyed because they were sliding into the river, the old Trollwood and Edgewood clubhouse were sliding into the river, roads, dikes, etc have been damaged by the unstable soil along the river. Building anything 50 plus feet above the river bed and on the banks of the Red River is sure to fail at some point. It would not be necessary to reroute all of the water in the Red River around the towns. The Winnipeg diversion has worked great and protected their city in 1997. The floodway capacity was at 60,000 cfs in 1997. The original diversion price adjusted to today was \$350 to \$500 million.

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Karen

From: Evans, Craig O MVP

Sent: Wednesday, July 15, 2009 9:21 AM

To: 'Dave Ruhland'
Cc: Snyder, Aaron M MVP

Subject: RE: Fargo/Moorhead Levee Option

Mr. Ruhland,

Thanks for your interest in the Fargo-Moorhead Metro Feasibility study. We are still working with very preliminary alignments, and we are not ready to share them with the public yet. We will have more details to share in October, when we plan to have more public meetings. Please realize that the alignments will continue to shift, even after October, as we optimize levee heights and investigate soil conditions. Given the preliminary nature of our alternatives, I cannot say at this time how many homes would need to be removed. Also remember, we are looking at a number of different concepts, including levees, diversions, storage and non-structural measures that may be used in combination with each other, and that will affect the answers to your questions as well.

Thanks for your patience as we continue the study.

Craig Evans
Senior Planner & Project Manager
St. Paul District
U.S. Army Corps of Engineers
Office: (651) 290-5594

Mobile: (612) 518-3413

e-mail: craig.o.evans@usace.army.mil

----Original Message----

From: Dave Ruhland [mailto:daveruhland@yahoo.com]

Sent: Tuesday, July 14, 2009 3:41 PM

To: Evans, Craig O MVP

Subject: Re: Fargo/Moorhead Levee Option

Craig,

Do you have any information about the below request?

Thanks,

Dave

--- On Fri, 5/22/09, Dave Ruhland <averuhland@yahoo.com> wrote:

From: Dave Ruhland <daveruhland@yahoo.com> Subject: Farqo/Moorhead Levee Option To: craig.o.evans@usace.army.mil Date: Friday, May 22, 2009, 10:54 AM

Hi Craig,

I have a question about the \$625 million levee plan that was discussed at the recent meetings. I assume that there is a map available detailing what this project would look like in my neighborhood. Is that true? If so, can I get a look at what the area by Southwood Drive, 11th street, and the Fargo Country Club looks like? In addition, how many homes would need to be removed for this project?

Thanks,

Dave Ruhland 806 Southwood Drive Fargo

fmflood@fmfloodcontrol.com From:

Sent: Wednesday, July 15, 2009 12:07 AM

Evans, Craig O MVP To: Flood protection for Fargo Subject:

This email was sent on behalf of Renee Clasen (egglady_nd@yahoo.com) by the FM Flood Control Group

Mr. Craig Evans:

We need a 100 year solution! The only method of flood protection that is sure to work is a diversion. Permanent levees could fail, especially at the extreme predictions of possible heights that were projected for F-M in the 2009 flood fight. Levees pose a greater risk of a catastrophic failure. The 2009 flood made us realize that a flood over 45 feet is possible. Homes have been destroyed because they were sliding into the river, the old Trollwood and Edgewood clubhouse were sliding into the river, roads, dikes, etc have been damaged by the unstable soil along the river. Building anything 50 plus feet above the river bed and on the banks of the Red River is sure to fail at some point. It would not be necessary to reroute all of the water in the Red River around the towns. The Winnipeg diversion has worked great and protected their city in 1997. The floodway capacity was at 60,000 cfs in 1997. The original diversion price adjusted to today was \$350 to \$500 million.

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The proposal of the Corps to start at the Wild Rice River and end way north of Harwood is very good. The diversion would offer better protection from overland flooding on the ND side of the river. Property will have to be taken by eminent domain; either homes along the river and drains for dikes and flood walls etc., or farmland for the diversion. The \$909 million for the diversion would seem to have much greater benefits than the levees. We need to find a way to get a favorable cost benefit ratio or find another way to fund the diversion It should be selected immediately as the preferred method. Sincerely

Renee Clasen

From: fmflood@fmfloodcontrol.com

Sent: Wednesday, July 15, 2009 12:44 AM

To: Evans, Craig O MVP
Subject: Flood protection for Fargo

This email was sent on behalf of Lindsey Heidt (lheidt99@hotmail.com) by the FM Flood Control Group

Mr. Craig Evans:

We need a 100 year solution! The only method of flood protection that is sure to work is a diversion. Permanent levees could fail, especially at the extreme predictions of possible heights that were projected for F-M in the 2009 flood fight. Levees pose a greater risk of a catastrophic failure. The 2009 flood made us realize that a flood over 45 feet is possible. Homes have been destroyed because they were sliding into the river, the old Trollwood and Edgewood clubhouse were sliding into the river, roads, dikes, etc have been damaged by the unstable soil along the river. Building anything 50 plus feet above the river bed and on the banks of the Red River is sure to fail at some point. It would not be necessary to reroute all of the water in the Red River around the towns. The Winnipeg diversion has worked great and protected their city in 1997. The floodway capacity was at 60,000 cfs in 1997. The original diversion price adjusted to today was \$350 to \$500 million.

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1

From: Dave Hoefs [davehf@facnd.com]
Sent: Wednesday, July 15, 2009 10:14 AM

To: Evans, Craig O MVP

Subject: Fargo-Moorhead Flood Control

Mr Evans:

I would like to urge you to strongly consider a diversion to protect Fargo-Moorhead from future flooding. There are many flood control options on the table right now and I believe a diversion plan may not be getting due consideration. Given the enormous expense of fighting floods and funding flood protection the public deserves a thorough review of this proven method of flood control.

Thank you,

David Hoefs Senior Engineer

Fargo Assembly Company

Phone: 701-298-3803 ext. 361 / 701-356-7386 direct

Fax: 701-298-9597

Email: davehf@facnd.com

From: fmflood@fmfloodcontrol.com
Sent: friday, July 17, 2009 2:11 PM

To: Evans, Craig O MVP
Subject: Flood protection for Fargo

This email was sent on behalf of John Bergman (jbergman@pinnip.com) by the FM Flood Control Group

Mr. Craig Evans:
 Dear ND Officials

We need a 100 year solution! The best method of flood protection that is sure to work is a diversion. Permanent levees could fail, especially at the extreme predictions of possible heights that were projected for F-M in the 2009 flood fight. Levees pose a greater risk of a catastrophic failure. The 2009 flood made us realize that a flood over 45 feet is possible. Homes have been destroyed because they were sliding into the river, the old Trollwood and Edgewood clubhouse were sliding into the river, roads, dikes, etc have been damaged by the unstable soil along the river. Building anything 50 plus feet above the river bed and on the banks of the Red River is sure to fail at some point. It would not be necessary to reroute all of the water in the Red River around the towns. The Winnipeg diversion has worked great and protected their city in 1997. The floodway capacity was at 60,000 cfs in 1997. The original diversion price adjusted to today was \$350 to \$500 million.

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The proposal of the Corps to start at the Wild Rice River and end way north of Harwood is very good. The diversion would offer better protection from overland flooding on the ND side of the river. Property will have to be taken by eminent domain; either homes along the river and drains for dikes and flood walls etc., or farmland for the diversion. The \$909 million for the diversion would seem to have much greater benefits than the levees. We need to find a way to get a favorable cost benefit ratio or find another way to fund the diversion It should be selected immediately as the preferred method.

We can make the diversion project become a reality if we all work together for this very important project.

If you should need help to get this project started you can contact me at 701-293-3281.

Thanks! John Bergman

From: LOREN MICHELLE HOLSCHER [holscher6@msn.com]

Sent: Friday, July 17, 2009 2:55 PM

To: Evans, Craig O MVP; Snyder, Aaron M MVP; governor@nd.gov;

dwalaker@cityoffargo.com

Cc: fmflood@fmfloodcontrol.com
Subject: FM Permanent Flood Control

I am writing to inform you of my support for the split flow diversion that has been recommended by the Flood Protection Coalition for the FM Community. For permanent flood protection, the advantages of the diversion far outweigh the advantages of a levee or other type of system.

Major areas that I like about the diversion are one, if the water level would exceed the diversion, the flooding goes to fields to the north and west and not inundating the cities of Fargo, Moorhead, West Fargo, etal. Two, there is the ability to add containment for some of the spring runoff that could be used in dry years which could negate the need for a pipeline to the Garrison Diversion. Three, we can do it all right here in North Dakota and eliminate the red tape of having to work with two states which means getting it done in a more timely fashion.

Thank you for the opportunity to convey my support.

Loren Holscher 1738 7th St S Fargo, North Dakota

From: fmflood@fmfloodcontrol.com

Sent: Wednesday, July 22, 2009 11:47 AM

To: Evans, Craig O MVP
Subject: Flood protection for Fargo

This email was sent on behalf of Leah Fujimoto (LFuji@cableone.net) by the FM Flood Control Group

Mr. Craig Evans:

We need a 100 year solution! The only method of flood protection that is sure to work is a diversion. Permanent levees could fail, especially at the extreme predictions of possible heights that were projected for F-M in the 2009 flood fight. Levees pose a greater risk of a catastrophic failure. The 2009 flood made us realize that a flood over 45 feet is possible. Homes have been destroyed because they were sliding into the river, the old Trollwood and Edgewood clubhouse were sliding into the river, roads, dikes, etc have been damaged by the unstable soil along the river. Building anything 50 plus feet above the river bed and on the banks of the Red River is sure to fail at some point. It would not be necessary to reroute all of the water in the Red River around the towns. The Winnipeg diversion has worked great and protected their city in 1997. The floodway capacity was at 60,000 cfs in 1997. The original diversion price adjusted to today was \$350 to \$500 million.

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From: Mark Jensen [mark.jensen@und.nodak.edu]

Sent: Wednesday, July 22, 2009 10:23 PM

To: Evans, Craig O MVP; Snyder, Aaron M MVP; governor@nd.gov;

DWalaker@cityoffargo.com; fmflood@fmfloodcontrol.com; Honeybun

Subject: Flood control method - a Fargo citizen.

Ladies and Gentlemen,

I am writing to express my "man in the street" level observations and conclusion regarding the Fargo flood control method.

I am trained in biology and organic chemistry. I teach surgery at UND medical school. This means I live in a world of observations and data to make the best decision in a complex environment.

Here are my observations as a non-engineer:

- 1. The Grand Forks temporary dikes were overwhelmed in 1997.
- 2. The Grand Forks permanent dikes held in 2009.
- 3. The flood levels are becoming more unpredictable.
- 4. Fargo and Grand Forks temporary and permanent dikes are expensive.
- 5. Failure of a dike is ruinous to a community and its businesses and their futures.
- 6. A dike has a structural limit.
- 7. Diversions in West Fargo and Winnipeg have a clear history of success.
- 8. Diversions do not need to be rebuilt, and do not increase upstream water levels.
- 9. Increasing upstream water levels will adversely affect farmlands.
- 10. Diversions assist the river to flow more freely.
- 11. A temporary dike can be constructed to assist a diversion. A diversion cannot be constructed rapidly to assist a dike system.

Choosing a diversion appears to be the best option. Choosing the cheap or easy option does not stand the test of time well. Please use wisdom in your decision.

Thank you for listening to me, Mark Jensen, north Fargo resident. 4584 Riverwood Drive North Fargo, ND 58102 701-277-1625.

To: Sobiech, Jonathan J MVP

Subject: RE: flood protection for Fargo-Moorhead

----Original Message----

From: Ron Bergan [mailto:ronb@facnd.com]
Sent: Tuesday, August 11, 2009 4:23 PM
To: Evans, Craig O MVP; Snyder, Aaron M MVP

Cc: DWalaker@cityoffargo.com; mark.voxland@ci.moorhead.mn.us

Subject: flood protection for Fargo-Moorhead

August 11, 2009

To the Army Corps of Engineers;

Fargo, North Dakota voters recently showed their commitment by voting overwhelmingly to approve a tax increase to help pay for permanent flood protection. The Flood Protection Coalition for the F-M Community appreciates the work the Corps is doing to evaluate options for permanent flood protection. However, it is our understanding that the diversion option sizes have recently been changed; and, therefore, we believe more public comment is warranted.

It has been communicated that your study now only has on the North Dakota side a 30,000 cfs and a 40,000 cfs diversion both of which are larger at the north end. This compares to 25,000 cfs, 35,000 cfs and 45,000 cfs previously designed and still included in the study on the Minnesota side of the Red River. We are concerned that the plans being studied do not include a minimum sized plan with the proper specifications on the west side of the river. We are also concerned that any diversion plans are thoroughly studied with an effort to keep costs as low as possible. In addition, in order to evaluate the cost benefit ratios properly, all possible benefits need to be discovered and properly applied to the ratios.

The Flood Protection Coalition for the FM Community proposes a 20,000 cfs diversion increasing in size as it flows north on the North Dakota side, diverting the Wild Rice and adding water from the Red only if the cost is justified. This or any diversion plan should block the water from going east into Fargo and West Fargo; and, if the design capacity is exceeded, the water would flow to the west and north. The 500 year flood map shows water in this overflow area. The clay from the diversion could be used to build ring dikes around any affected properties and to raise roads and should be part of the costs/benefits. A control structure on the Red should be avoided if possible because it will potentially raise the river level to the south and provide little

1

or no benefit to that area.

An option to any North Dakota plan could be to divert only the Wild Rice River west of I29 to reduce costs. Not having a control structure on the Red River will lower the river level to the south and increase the benefit area. A study should show whether this would keep the river through F-M at a level at which the flood fight can be won even in a 500 year event. The peak flows at Hickson were 13,300 cfs in 1997 and 14,400 cfs in 2006 until this year. The provisional data for this year of 21,800 cfs does not fit with the data from other sites for this year. If it is correct, is it at about the 500 year flood level.? The Wild Rice, Sheyenne and Maple rivers appear to drain a larger area than the drainage area of the Red that flows through F-M; and, they have a much shorter route to the Red in the Fargo area when they are flowing overland, which would happen in a 500 year flood. We have shown that we can fight and win even a 40.82' flood (29,100 cfs); the costs are low if we only do this once in 500 years. The costs were increased greatly in 2009 by the 43' and 44' crest predictions.

The Winnipeg diversion was increased from 60,000 cfs to 140,000 cfs by removing only 21 million more cubic meters of soil compared to the 76 million cubic meters removed originally; and no additional land was acquired. The 13 mile West Fargo diversion should be used and expanded for part of the plan. Please evaluate whether or not the area of the Sheyenne diversion under the I94 Bridge can be made deeper and wider to get by without replacing the bridge until the next time the interstate is worked on. The spoil banks could be used to increase the head pressure going under the bridge.

We also ask the Corps to review management of current water storage in dams when a 100 plus year flood is predicted. If necessary change the law or guidelines to maximize benefits for floods over the 100 year mark. The goal should be: when the inflow reaches the maximum controlled outflow the reservoir is empty, and continue the maximum outflow until such time as the storage is needed to reduce the peak. Calculate at that time if all or how much of the flow can be restricted. If we have extra water for some time before the peak, that is better than a higher peak. Fish can be restocked if needed.

The Flood Protection Coalition for the F-M Community believes the levee system designed for a 100 year flood as proposed in the preliminary Corps plan is not acceptable and is not comparable to a diversion system that will protect us from a 500 year flood. We feel very strongly that any flood protection plan must protect our community from a 500 year event and a diversion on the North Dakota side of the river is the only

viable option. As long as the diversion has a favorable cost benefit ratio and a large area benefits, then the bigger the diversion the better. We also would like to point out that a levee system will not be as durable or last as long as a diversion system. It is clear that levees fail and deteriorate as well as move water levels higher. We are also very concerned that an unsightly dike system in downtown Fargo-Moorhead will build walls between our communities and reverse the decades old effort to bring the communities together. Lastly, property values in our downtown and riverfront areas can be enhanced with a diversion system where they would be impacted downward by a levee system.

The benefit of saving the stated \$61 million for proposed buyouts of riverfront property may, if protected from flooding by a diversion, increase to a value of \$100 million. We believe the buyout money and the loss of property taxes are used in calculating benefits; but, are the Park District damages and loss of revenue included for all the summer floods? We think that the extensive drainage (500 plus miles of public drains in Cass and Clay counties) plays a big role in the summer floods. It should be noted the planned south side flood protection would not be needed and would save \$175 million. Property taxes will also be lost in the south side plan and upkeep will be required. The benefits from reducing a 500 or 700 year flood to a winnable level should be included minus the costs of fighting the lower level flood. The cost effectiveness to fight a 100 year flood one time in 500 years versus making a larger diversion needs to ascertained.

Because homes do not have to be acquired along the river for levees or to raise the dikes, their value will be enhanced with a diversion and the absence of a large dike between the homes and the river. The integrity and beauty of the Red River, including the riparian forest, will be sustained for future generations.

Thanks for your consideration,

Flood Protection Coalition for the F-M Community Steering Committee,

Ed Schafer

Ron Offutt

Steve D. Scheel

Doug Burgum

Dick Solberg

Bruce Furness

Ron Bergan

Erv Inniger

Fargo-Moorhead Public Meeting Written Comments May 2009

090606_Matthew Breker – As a Fargo resident and farmer from the southern Red River Valley, I have interests in protecting both Fargo and my farm and cropland. I am interested in the economic analysis of all potential upstream water retention. Please contact me regarding the above. mjbreker@yahoo.com

090606_Jim Armfeld – Unless the Southside project is an important and apart of your plan why proceed? <u>jimmel@ideaone.net</u> (email address may be wrong)

No Date_Dave Anderson – I believe we must utilize every measure – barriers, diversion, and storage to ensure the greatest level of protection. <u>dave@fmdowntown.com</u>

No Date_Elise & John Leitch – Hurry, Hurry, Hurry! <u>jel@cableone.net</u>

090606_Charles Koski – Any project should consider redundancies to allow for modification of any catastrophic failure le diversion and modified flood barrier and or storage. How can you adjust your project for a river that flows north into frozen drainage channel?

bonniek@i29.net

No Date_John Stern – Outside the box idea: 2 way pipeline to reservoir behind Garrison – flood relief in spring, water supply in summer during dry years. John.sherri.stern@gmail.com

090519_Kathy Laney – I vote for a diversion: long term solution, allows FM to still be a river city, provides protection to surrounding small communities. Start Now! If we could sell our home we would move out of community. Kathy.laney@live.com

090519_Shirley Syverson – Good informational meeting.

090606_Daryl Lahren – Why do you need a 500 ft wide base at the bottom of the diversion? dlahren@aol.com

090519_Daniel Holm – Excellent presentation! Good materials, appreciate the effort to get feedback from the group. bowfrog@hotmail.com

090519_Charles D. Dunnell – Number one choice is: diversion channel, are we as smart as the Canadians!? This would keep old river bed for its beauty as it runs through the cities. Number two choice: could West Fargo diversion be modified/ added on to, so it would take water at Red River? dunnellc@yahoo.com

090519_Pat Staples – Please coordinate Southside Fargo Project with your plan. This needs to be synchronized!! Diversions appear to be the best long term solution. patstaples@cableone.net

Comments and Questions from Moorhead Public Meetings

090520_A Saharieff – Please consider: dredging the river under the 3 bridges; Main Ave, NP Ave, & the Rail Road tressle. Also design & build torpedo shaped flow accelerators in front and behind the bridge support abutments. Flow must be enhanced for levees to work. Please consider dredging and cross cutting the river channel

090606_Diane Ista – How far downstream do you measure impacts? 30 miles downstream are small communities that are very important to the agricultural economy as well as the social and cultural structure needed in our rural communities. These communities cannot take any more directed water; we are in danger of losing small towns. This will increase the infrastructure needed of FM as they move there. More farmland under concrete. No more water downstream!! We need assistance to build retention on the MN Wild Rice River which would reduce the flows to the Red. More water from diversion if tributaries to red reduce flow. dijsta@loretel.net

090520_ Patte Kratky – As co-president of league of women voters of the Red River Valley and member of River Keepers, I offer my services to the planning boards, as a concierge. Please contact me at 701-235-8200 ext 7-204 currently or at my email address, a message maybe left at 218-233-8382 or email. We were displaced by the flood and are repairing our home. LWV is non-partisan, non- profit grass roots organization. Patty4st04@aol.com

090520_ Mark Nokken – Water retention to keep floods at a manageable level. mnokken7@yahoo.com

090520_Jill Johnson-Davidson – We would like our property protected. No one interviewed my neighborhood last September, (Woodlawn Point, Moorhead). Proud survivors, who live with river. What is least damage: dredge or diversions – both have impact. End building permits on spongy wetland. Permit and enforce coordinated farm runoff. What is best for the river and her health? Don't only listen to or believe city officials especially about buyouts – ask residents directly. Why are there more floods, higher crests – what are the contributing factors that can be mitigated. Moorhead's goal was to protect infrastructure not homes or people. Fargo diked extensively; raised water in our neighborhoods. We were not contacted in September – based on our location, I would think we would be. Diversion number one choice. Explore contributing causes of why floods have increased. We love the river – for us, the river is not the problem – the flood is not the problem.

codirectorjjd@yahoo.com

090520_Calvin Singleton – Need info, flood proofing by fill with clay. singleton@wapa.gov

090520_Gary Shramstad – I suggest a diversion of the Sheyenne from McVille to the Red River north of Grand Forks. This would alleviate flooding on the Sheyenne and Red, since the Sheyenne headwaters are north of Bismarck. It would also solve the problem of Devils Lake overflowing.

090606_Deb Haugen – Is there an aquifer newly discovered south of Moorhead, west over the proposed diversion, and east of the Red? We wouldn't cause potential damage to clean water source in times of drought? dlhaugen@cableone.net

090520_Paul & Deborah Kukowski – Thank you for the information. Concern: Economic and non-economic impact of any diversion project on the communities and agriculture industry north of Kragnes, MN. paulski@anyconnect.com

090606_Barbara Headrick – How much will be on website as you work on study over next 4 months? How will Corps handle currently existing structures, such as the Sheyenne diversion in West Fargo, could they be altered to work better for the full region or must your project deal with it as is?

Barbr.headrick@gmail.com

090520_Chuck Stenso – Buy out homes on west side of River Dr. Build berm to 46-48 feet along west curb. Area could have bike path/picnic area.

 $090520_Deanne\ Sperling$ — Diversion seems the most practical solution. $\underline{dmsperling@hotmail.com}$

090606_Stanley Wolf – I live in section 6, Oakport Township, Clay County. I see that there is a proposed levee that encompasses the area between 70th Ave NW and 80th Ave NW from the river to Broadway St. Question: How did this levee become part of the proposal: At present there are only a dozen or more homes in the protected area, an area of about 300 acres. I live just north of the levee area – how will this affect my property. Ducksoup25@yahoo.com

Nancy Steinberger – Please keep me in the loop on H & H modeling efforts. FEMA is currently working on models for the Sheyenne and Maple Rivers. We have a preliminary Digital Flood Insurance Rate Map coming to Fargo in the summer of 09' and a Cass county DFIRM shortly there after (about 1 yr out). No action should NOT include flood fighting. Emergency measures can cause a rise in flood elevations. If that's the baseline, the project could slip through as not causing a rise even if it does. Flood permits from all affected communities will be required. A CLOMR and LOMR will be required. Nancy.steinberger@dhs.gov

Rick Archer – Recent 2009 flooding has resulted in discrepancies between projected river gage water surface elevations with recorded flood discharges. This may be due to different stream d/s setup conditions (Sheyenne) than what original floodplain model is showing, or due to flood fight efforts. I would like Corps of Engineers to look more closely at hydraulic conditions that may be leading to water surface elevation discrepancies.

Anonymous – Build retention areas along the rivers that feed the Red. That's where it starts. Pay the farmers to hold the water. Flood costs should be less overall. Varies yearly. The longer the farmers hold the water the more money he gets. These farmers are losing income and need to be paid for their sacrifices. That sacrifice will vary every year, dry years nothing, low flood years only land close to FgoMhd will be paid. Extremely wet years, all areas will hold water for a time – the length of time that water is held determined by the flood level in FgoMhd, 34', 36', 38'? Whatever levees can handle in FMhd. That controls how long water is held and amount of compensation paid to a farmer for his delay in planting – longer he holds water, the bigger his loses, and the more compensation he gets – (later planting, less yield) (\$ amount changes every 2 wks?)

These wet years, crop yields would be less and holding water would be like insurance, they would get some income from their land – guaranteed. Public resistance to flood control would be less – nothing permanently destroyed or damaged. Environmental problems be less. No permanent damage to land compared to diversions or channel extensions or oversized dikes. Some floodwalls or smaller dikes will be needed in some areas. This is one piece of the pie that should be studied. You solve a problem before it

is a problem, not after it has become one. That is what we're all trying to do, so let's resolve it at the <u>start</u>. Before the flood water gets here.

090520_Reinke - Having attended the flood presentation @ Moorhead State I believe the only real resolve to the long term flood problem must involve some type of diversion.

Water retention and other forms of water control may offer some form of relief, but they are only band aids to the overall problem.

It was an excellent presentation.

Gary C. Reinke 5327 BSouth Univ. Drive Fargo, ND 58104 701 293 7084 GaryC_Reinke@msn.com

090519_Cousins I am a retired Clay Co. Engineer.

I have lived in Fgo-Mhd since 1950, except for 9 yrs. I feel a permanent flood is essential as it seems floods are becoming worse and the 2009 flood costs the area many, many millions of dollars plus tremendous private suffering.

I feel a levee plan has maximum height restrictions and I fell we are approaching that elevation. I feel any plan must include a diversion channel. The cities that have one seem to do well – Breckenridge, West Fargo and Winnipeg. I would like to see a combination plan, levees and a diversion channel.

I have several questions which will be answered as the study progresses. A 500 foot wide, 20 feet deep below field elevation, and a 2000 foot top width diversion channel seems excessive. I assume this is wider than the Red River. What is the CFS for a 100 year flood and what CFS would the diversion channel handle? What is the proposed water depth and velocity of the diversion channel? Would a diversion channel be detrimental to anyone downstream?

I thank you for your study and look forward to reviewing your recommendation.

John A. Cousins 1508 52 ½ Ave. No. Moorhead, MN 56560 218 233 2384 Jac.bev@juno.com

090519_Bach - Is the goal of the project to eliminate the need for any temp/emerg. levees/ diking? If so, is there a protection level and are those costs included in the diversion costs?

What about off-line storage on ND side south of Wild Rice? Has that been looked @? Probably need 8-10 sections of land dig 20' deep.

Eris Bach 5505 16th St S Fargo, ND 58104 ebach@srfconsulting.com

090519_ **Mathern -** Our hospital was evacuated by Governor's order. There was a loss of \$750,000 net income during this time though very little property damage; such losses need to be included in the cost benefit analysis.

Tim Mathern
Prairie St. John's Hospital
510 4th St S
Fargo, ND 58103
701 476 7825
tmathern@prairie-stjohns.com

090519_Mathern State match dollars need to be directed toward a comprehensive regional flood prevention plan.

Senator Tim Mathern 429 16th Ave. S Fargo, ND 58103 701 235 9817 tmathern@nd.gov

090519_Mathern - Our home was right next to the dike – we support a permanent dike plan even it it affects our view of river and change to our property.

Tim Mathern 429 16th Ave. S Fargo, ND 58103 701 893 5016

090520_Olson - I am interested in flood control. Let the Army Corps of Engineers do the job: Once over and done. The cost is high but is worth every cent. To go through flooding is wasteful when a permanent solution can be attained.

The Fargo Flood Plan is too restricted in scope. It appears as if developing the area is a priority, rather than flood control. My assumption is that politics has entered in. Individuals with prestige are spared intervention of flood control. This was verbalized at one meeting.

I resent the diversion planned on my property: (Stanley Township, South of County 14, Sections 25 and 26). This is devastating to the beautiful farmstead (which has been in our family since the 1880's) the tranquility and beauty of the river, the adjacent wooded area and the farm acreage. It is difficult for me to believe that this type of devastation could be handed to me.

It is not true that I am not interested in flood control. If need be, I will approve the planned dike (wet side) on the West rim of the property.

I chose to not develop my property. Others did, knowing they were in harm's way. Now I am needing to sacrifice my property when my family worked so hard to keep its ownership. We worked so hard. Our family never asked for any assistance from the Federal, State, county, township or local governments. We kept working. By the way, the buildings on the farmstead have never experienced flood water. This really shows that Norwegians knew where to place their building sites.

Respectfully submitted by:

Irene L. Olson 2510 100th Ave South Horace, ND 58047 218 233 3203

APPENDIX C

Written Questions and Answers from Scoping and Public Meetings

Appendix C Question and Answers During Scoping Meetings

Moorhead, Minnesota November 17, 2008 Public Meeting
Fargo, North Dakota November 18, 2008 Public Meeting
Fargo, North Dakota May 19, 2009 Public Meeting
Fargo, North Dakota May 20, 2009 Agency Meeting
Moorhead, Minnesota May 20, 2009 Public Meeting

Q: What are the new 100-yr and 500-yr FEMA flood stages?

A: 100-yr is 39.5' on the Fargo gage; 500-yr is approx. 41-42'; the old 100-yr was 38.3'

Q: We thought the 1997 flood was much larger than a 100-yr event.

A: During the event it may have been reported as a much larger event. After all analysis was completed, we determined that it was approximately a 100-yr event. The 1997 flood in Grand Forks was approximately a 125-yr event there.

Q: I don't understand how a 100-yr flood could have a 1 in 4 chance of occurring over the next 30 years.

A: That's the way the statistics work. . .

Q: Did you factor in all historic events to figure out the 100-yr and 500-yr stages?

A: Yes.

Q: Do all new developments build ponds to hold water, i.e. to not impact flood levels?

A: Kevin: The Corps assumes in our analyses that the local folks will use best management practices, and the Federal project will not make things worse for others, including ag producers.

A: Bob Z: All subdivisions must include ponds designed to hold a 100-yr runoff event and all houses must be elevated above the 100-yr elevation.

Q: Winnipeg has 700-yr level of protection from their bypass channel. Is that an option for F-M?

A: Yes. We will consider diversion channels.

Q: If regional protection is the goal, why is Fargo's Southside Levee not on the table for a Corps project?

A: April: The FSS project will have no impacts if all of the features are built.

Q: What have we learned from the floods in Iowa last summer?

A: We will be looking at all of the risks and put together a system to reduce them.

Q: What will the feasibility study cost the locals?

A:

Q: Asked to Bob Zimmerman: Can you confirm that there will be no impact from the FSS project?

A: I'm comfortable with the analyses Fargo has done, but I have not run the models myself.

Q: FSS channel extensions will directly impact some landowners. What will happen if they are built and then the Corps diversion is built later?

A: Both projects would stay in place, and we would expect them to both contribute benefits. We do consider impacts to landowners in our analyses of social effects, but our focus will be on doing the most good for the region while impacting as few people as necessary.

Q: Can we just widen the river that's there?

A: There are many issues with channelization, especially from an environmental perspective. The odds of obtaining a permit for channel widening are slim to none. All of our projects must be environmentally acceptable and go through the NEPA process to disclose and mitigate for any adverse environmental impacts.

Q: It seems like common sense to hold off on other projects until this regional plan is complete.

A: Bob Z. and Mike L.: Even with anything we would propose for a regional solution, there will still be a need for a levee on the south side of Fargo because the land is so low.

* * *

Moorhead City Council Member asked the following questions:

Q: What are the realistic options other than a diversion? Storage is too expensive upstream, and levees can't solve the whole problem.

A: We agree with your summary of the options.

Q: FSS project is proposing 3 miles of channel extensions. Aren't these environmentally problematic?

A: Mike L.: The environmental agencies generally do not like them, but they are more acceptable at a higher elevation that will be used less frequently.

* * *

Q: There is concern that the whole FSS proposed package may not be implementable, especially the channel extensions in Minnesota.

Q: Could the regional solution include the Sheyenne Diversion, or does the existence of the SD make us go into MN with a new diversion?

A: Mike L.: There are many complications with tributaries on the ND side. The complication in MN is higher ground, therefore higher expense.

A: Aaron: We will look at all alternatives to make sure we pick the best one.

Q: Where would a MN diversion go? Will my house be impacted?

A: We're not there yet, and we won't be in April either.

- Q: What is the level of protection we're looking for?
- A: We have to determine what makes economic sense, but we want as high a level as we can justify.
- Q: Will the Corps look at the future with and without the FSS project?
- A: Kevin: We'll work with our sponsors to determine what the appropriate future condition is.
- A: Mike L.: I haven't thought about this yet.
- Q: From Mike L. to April W: Would Fargo build the FSS project without all of the proposed features?
- A: April: We're shooting for the least impact possible. It would be allowable under floodplain planning to raise water surface up to 9 inches.
- A: Mark Bittner: Fargo has looked at diversions, and they're very expensive. There's a good chance the Corps will not find anything economically justified, and even if they do, the cost will be high, and it will take a long time to get funded.

Statement from Moorhead City Council member: There will be a water war if Fargo puts 9 inches of water onto Minnesota.

At this point, Kevin halted the discussion and summarized many of the issues. He asked folks to remember that the Corps study is different than FSS levee, and we're looking for a regional solution.

- Q: Why build homes where the low ground and flooding is?
- Q: The Sheyenne Diversion project created ponding where there was no flood problem before. Beware of creating unanticipated problems.
- Q: Are you designing a passive system or an active system?
- A: We want the system to be as passive as possible, but it will likely include pump stations that will need operations and maintenance.
- Q: All of the cities that are developing should talk about their future plans before they build something that will be in the path of our project.
- Q: Will the feasibility study make any recommendations on how to finance this project? A: We will ask the sponsors to self-certify that they have the capacity to do the project. The Feasibility study will lay out all expected costs so the cities will know what is needed.
- Q: How do we know that the Federal funding will be there for the study and the project? A: We don't know that. We have to go through the steps to get a project authorized and then funded. All we have authority to do now is study the problem.

Q: What other projects does the Corps have right now.

A: FMMFS and Devils Lake are our two biggest projects in the RRN right now. We also have the Roseau project going into construction; Montevideo, MN; Ada, MN study, and several other smaller studies. (Forgot to mention Wahpeton-Breckenridge and Fargo-Ridgewood).

Q: Why is the Corps coming in now?

A: Local leaders asked us to study the regional flood problem.

Q: What is in Phase 1—what will we know in April 2009?

A: We will be able to show a list of alternatives that we plan to study and another list of alternatives we plan to drop from consideration.

That concluded the group Q&A session for 17-Nov.

Gaylen Vaa, 6273 7th St. SW, Moorhead (Briarwood) says cutoffs in Minnesota cannot be built without eminent domain, and Fargo cannot condemn land in MN. They need to start working with a MN partner.

Q: How does this study interface with the Fargo Southside (FSS) project? The goal of that project is to get FEMA certification in order to avoid the need for flood insurance. A: We're looking at the whole region—FSS is only one component. FSS is still necessary even if a bigger project is built. Anything we'd do on a larger scale would augment the other smaller projects. We will look to make sure the FSS features are still needed. The system would still have to convey smaller floods through town and have the larger features take flow off of the larger events. There is a city-wide meeting next Monday at the Civic Center.

Q: Here's the obvious question: why do we need floodwalls in Harwood Groves if you're going to build a diversion.

A: You're asking about a detail of the FSS project, and we need to talk about the larger system.

Q: It seems like we're doing the studies backwards—shouldn't we do the macro study first?

A: Macro scale may take several years. Micro scale will still be necessary.

Q: If we already know the micro solutions, why do the macro study?

A: The small projects provide a low level of risk reduction. We still need a larger system.

Q: I question the 1:4 odds you presented. The projects we're talking about will protect us.

Q: Where does the money go?

A: The Corps is spending the money for its work. Phase 1 will determine whether we want to continue.

Q: Could we increase conveyance through town?

A: Mike L.: There are things we could do, but many of them would have significant environmental issues. Bridges could be raised and openings improved.

Kevin: with channelization features we have to factor in environmental considerations.

Q: B/C ratio—is that taking into account urban sprawl and future development?

A: That's a little sticky from a Federal perspective. We count benefits for reducing flood risk to homes, commercial and public infrastructure, and agriculture. Future developments (intensification benefits) are highly scrutinized, because we don't want to promote growth in flood plains. We will include intensification benefits in the Regional Economic Analysis, but not in the Federal B/C ratio.

Q: Clarify "channelization."

A: Channelization involving wholesale clearing and straightening of the natural river channel is problematic. Smaller cutoffs at higher elevations are less environmentally damaging.

Q: I don't understand levees. What is wrong with building dams like the Garrison Dam? A: We don't have really good places to build dams. We are still looking at smaller dams, but they will have limited effectiveness. Channelization of the natural channel has problems. We are considering diversion channels.

Q: What is the depth of water at Fargo vs farther north—does the river get deeper as it goes north?

A: The volume of water does increase as you go downstream and pick up more tributaries.

Q: Are we still considering the "waffle plan?"

A: Scott Jutila: we have looked into that along with other types of distributed storage (in the FMUS study). It is relatively inefficient—we can't completely solve the problem using distributed storage. It may be part of the long-term solution, but not the total solution.

Lee Klapprodt: I concur with Scott. We need a combination of things including watershed management and flood infrastructure.

Q: Is there a potential for FEMA's policies re: flood insurance and grandfathering rates to change?

A: April W.: FEMA will currently grandfather people in if you carry flood insurance now (a loyal customer). That doesn't mean rates won't increase, but they won't move you to a higher rate class through re-mapping. There are no guarantees that FEMA will continue this practice.

Q: How does the future flood map affect development?

A: The City of Fargo provided preliminary FEMA data to developers so they could act accordingly. Local standards require first floor elevation 2.5' above the current base flood.

O: What is the current base flood elevation?

A: The current elevation is 38.3 feet at the Fargo river gage. The new BFE will be 1' to 2.5' above the existing BFE, depending on where in town you are.

Date: 05/19/09

Location: Fargo Centennial Hall, Public Meeting

Agenda

5:30 PM Open House 7:00 PM Presentation

7:55 PM Question & Answer

Q. The coverage area is the Fargo metropolitan area, but County officials have not been present. How have you been working with mayors, other elected officials and other organizations?

A. Our official sponsors are listed as the Cities of Fargo, Moorhead and the Buffalo Red Watershed District. Initially a meeting was set up with a large number of stakeholders and coordination continues to take place. Some work may occur in rural areas, but the focus continues to be the metropolitan areas.

Q. How much of the \$625 million in the first estimate is attributed to the Southside Project? How would characterize the economic value of the project? Will the Southside Project solve the flood problem?

A. Southside Project totals approximately \$160 million of the estimate. Benefits are correlated to the level of protection provided by the project. If flood protection is high enough, flood protection could be extended out beyond the City proper. This project is intended to address regional flood issues. USACE wants to ensure that solving one problem won't cause another one.

Q. It appears that the earliest the project would be constructed would be ten years from now. How can we protect ourselves in the meantime? Does the USACE have a say in how we protect ourselves? I currently have a clay dike in my backyard and I could raise it – does the USACE have anything to say about that?

A. It's a good question that crosses several different jurisdictions including municipal code, state and Federal law. Please provide us with your name and we will research the issue for you because others may also benefit who are in a similar situation. (Mike) The USACE will not likely have an issue with retaining a levy, but you should check with FEMA and your City. (City, Walker) If you are in the floodplain, there is a permit required. The City wants to ensure that your levy is designed properly and does not lie within the floodway.

Q. Could you explain what an invisible wall is? How will a cut-off channel make things better?

A. (Refers to slide) An invisible flood wall, such as those built in Grand Forks, are incorporated into structures and not noticeable as a flood protection measure. In some cases, the structural measures are only present during a flood, but the essence is that invisible measures are incorporated into the landscape. Such measures tend to be operation intensive. Channel cut-offs will shorten the time that it takes for the river to flow through the City which results in a lower water elevation.

Q. In determining costs, are costs just related to physical damage, or is unemployment resulting from the flood keeping people from work factored in?

A. Flood damages are typically the primary driver, however, other costs such as those you mention are factored in. The National Economic Development criteria requires an evaluation of the cost to the Federal government but also the effects on the regional economy. Both losses will be looked at with this project. Productivity of the workforce and social stresses are real and evaluated in total costs, however this becomes very tricky. Often Congress asks for total costs without the social impacts but since Hurricane Katrina, the Federal government is much more sensitive to those issues.

- Q. I live at the confluence of the Wild Rice and the Red River what effect will the project have on the people how live in that area and those upstream.
- A. The alternative we've looked at so far will reduce water surface elevations at the area you're talking about. The diversion needs to be looked at in detail to ensure that the water is not conveyed so quickly through the City that it will have a downstream impact.
- Q. If a levy is constructed what level will it be constructed at? (For the City) If I want a permit to construct my own levy can I construct it to the level of the 1997 flood? A. The specific elevation targeting is part of our overall plan development process. We are not there yet, so providing that information at this time would only be a guess. We'll be working on that in the near future. (City, Walker) The City does have a cost-share program, but will not cost-share for those homes on the buyout list. The City will allow you to raise the elevation of your property with a permit. The FEMA maps will be changed soon.
- Q. I'm trying to build something in my backyard how high should I build it? Who will provide me with that guidance?
- A. (Refers to flood frequency slide) I would suggest you look at a graph like this and assess the risk of constructing something at a certain elevation. If you look at the recent history, there are higher stages and more frequent flooding in recent years. If you're concerned about the long-term viability of what you're building, you'll incorporate this into your plans. (City, Mark) We've had a number of flood failures in recent years. When making a decision, you need to look not only at your property, but also your neighbors' property to ensure that you're not causing more problems than you're fixing. We had a \$125 million worth of damage with the 2000 rain event even homes with protection were damaged. Building levies also affects the drainage in your yard and you need to take this into consideration.
- Q. The diversion costs \$900 million that's \$30 million a mile. Is there a diversion channel that would reduce the costs per mile? Any other alternative routes would need to take place before the end of this phase, correct?

- A. Part of the reason that the Minnesota side was looked at initially was that it was the shortest flow path and also fewer crossings. On the North Dakota side we would cross more highways and ultimately create a longer diversion channel. We will look at a number of alternatives, but this is a start. We will try to develop all of our alternatives that are reasonable and plausible by September. We hope to come back to you to present you with these alternatives when this is complete.
- Q. The diversion will circumvent the City; has any thought been given to buying out a larger portion of the river to create a larger river to convey more water?

 A. Making the river convey more water more quickly conflicts with the ecosystem preservation goals of the USACE. Straightening of rivers was once common, but is not often done anymore.
- Q. The inherent problem that you have is trying to convey water down a frozen river. Have you thought about using the I-29 corridor as a diversion?

 A. We haven't looked at that in detail. We have consulted with DOT and there are safety concerns about using right-of-way for flood control. Remember also, our concept diversion channel had a footprint of 2000 feet wide. The current interstate system does not have that sort of capacity so there are constraints in that particular area.
- Q. Who is the decision maker that will identify which plan will be presented to Congress? A. The initial decision maker is the Commander of the St. Paul District, USACE. The Commander will look to the project managers for affirmation that the stakeholders support the project, the USACE planning process has been followed and that the project makes sense. After a plan is submitted, Congress needs to make an appropriation for the project that will allow the construction to go forward.
- Q. Are the slides available in printed form, or can they be e-mailed out to people upon request?
- A. Yes we will have the slides up on the website, but they are not up yet. Google "Fargo Moorhead Flood Study" and the first hit you have will likely be the website. Both the slides and the handouts will be posted by the beginning of next week. Please let us know if you need anything else.
- Q. Why doesn't the USACE have more jurisdictions over the root of the problem which is the drainage of the landscape upstream?
- A. We've been studying drainage issues around the Red River and also Devils Lake. While storage has been looked at as a possible solution, the problem is that the costs and land acreage required to address the issue are enormous. Further, the soil in this area is very fertile and using the land for storage takes it out of production. The use of the land for agriculture versus flood storage needs to be taken in to consideration with the cost-benefit analysis.

Q. Could you talk about how the Southside Project will be synchronized with the USACE Project? If Southside goes forward, how does it affect your project?

A. As mentioned during the talk, the Southside Project is a non-Federal project and the local sponsor is working hard to ensure that the Southside Project does not adversely affect the USACE project. The USACE needs to be cognizant of the opportunities in the Southside area that may be in the Federal interest, however, we are not at that point yet. The City has an interest in moving forward with a project as soon as possible. (City, Mark) The City wants to ensure 100-year protection over the Southside area, although the City believes that 100-year protection is also necessary for the rest of the City. It appears that right now, we should be able to achieve a positive cost-benefit ratio for the Southside project. We want to get as much Federal money as we possibly can, but we don't want to jeopardize potential Federal funding; we will be working closely with the USACE to ensure that the Southside project does not increase flood stages.

Q. Will the Southside Development be incorporated into your analysis as built? A. No

Tom Grashens, MN DNR

Q. Will non-structural solutions involve any efforts to lower the peak?

A. No

Robin Coursen, EPA

Q. Will this only deal with flooding on the Red River, or will this be a regional study e.g. including the Wild Rice River?

A. This will be a regional study but focusing on the metro area. We want to understand the big picture.

Robin Coursen, EPA

Q. Will you be looking at impacts downstream towards Canada? Executive Order 11124 requires you to address transnational impacts.

A. No – we will limit the project area to focus on the Fargo metropolitan area. We will follow that guidance but assume that the impacts crossing into Canada will be minimal, if adverse at all. This will be addressed with the report. Noted that coordination will be performed with Canadian officials, (Robin will provide contacts she has).

Q. Does the \$600 million estimate comprise the current Southside estimate?

A. That takes the Southside project in addition to protective levies on both sides of the river.

Brent Truskowski, EPA

Q. Are you talking about diverting the entire river or would the water be diverted at a certain elevation?

A. Just flows above a level specified in the alternative analysis.

Q. Will your June 22nd deadline and project timeline be distributed within a public notice? Does this include an EIS as well?

A. Public notice has been issued already. We have combined the EIS and Feasibility Study in the past, but haven't decided for this project yet.

Brent and Robin, EPA

Q. What is driving the timeline? How is this coordinated with the Fargo Southside Project?

A. USACE wants to be responsive to the needs of the area to expedite the project and minimize the need to mobilize for another flood fight. Congressional authorization would like come in 2010 through a Water Resources Development Act bill. If we miss the opportunity in 2010, the next WRDA bill will presumably occur in 2012. (City, Mark) The City of Fargo believes that it would be ideal to coordinate the two projects to the greatest extent possible.

Brent Truskowski, EPA

- Q. How much impact analysis has been done in regards to wetlands and waters at this point?
- A. A fairly rough estimate the goal is to minimize impacts looking at channel alignments, etc. based on the alternatives. We would like to hear about areas of special interest or concern at this point.

Brent Truskowski, EPA

Q. You should consider channel stability, erosion and deposition in both the Red River as well as tributaries as a result of the project.

A. USACE will look at that.

Robin Coursen, EPA

Q. What will happen with fish passage in the area? How will they be affected by channel diversions? Is the U.S. Fish & Wildlife Service present? FEMA, USFWS, EPA and the USACE should meet to discuss issues. 40 CFR Section 1508.25 "similar and connected actions" of the project. At first glance, EPA believes that there may be similar and connected actions between the Southside and USACE projects.

A. USACE will look at that in conjunction with the project looking at fisheries, riparian woodlands, etc. USFWS is not present. USACE will coordinate future meetings with EPA, FEMA and USFWS.

Brent Truskowski, EPA

Q. Will you be allowing limited flooding, or mitigating all flooding e.g. agricultural field flooding? An indirect effect of flood protection may be to prevent all flooding in rural areas which should be considered in your analysis.

A. We currently don't know how the National Economic Development Plan will materialize. The extent of the protection provided will be dictated by the design. We will consider your suggestion in the analysis.

Robin Coursen and Brent Truskowski, EPA

- Q. Execute Order 11988 on Floodplain Management (minimizing development in the floodplain) should be considered. Growth impacts from the Southside Project may open up the need for a more comprehensive analysis.
- A. Noted the analysis will include evaluation of these alternatives.

Nancy Steinberger, FEMA

Q. Flood fighting should not be counted in the No-Action alternative. No flood protection measures in place should be the baseline for initial water surface elevations.

A. The economic analysis will include this baseline. For the environmental analysis, this needs to be resolved.

Bob Bezek, MNDNR

Q. The environmental impacts from flood fighting will be looked at as a temporary impact?

A. That is our assumption at this time.

Tom Grashens, MNDNR

Q. By treating the economic and environmental assessments differently (in regards to the presence of temporary flood protection), aren't you hedging your bets? You should be consistent in your methodology. More probability should be incorporated to assess both environmental and economic risks. Environmental analysis should include the flood fight (temporary levies in place) as well as the alternative of no temporary action (no dikes or levies).

A. The likelihood of future flood fights is very real, but the long-term reliability of such measures are uncertain, therefore the economic assessment is based on the higher likelihood of the probability of failure. We acknowledge the perception, but we want to be realistic.

Dan Cimarosti, Corps NWO

Q. When you look at the "future without project" do you look at future development in the area?

A. That issue is problematic because USACE does not want to promote growth in the floodplain, but that is where the growth is projected by the City. Typically we would not look at that, but we need to obtain additional guidance from headquarters on this issue. EPA

Q. On the topic of growth, will you be able to show us the growth plan for both cities? Will this include the City's strategies for addressing flooding issues?

A. Yes, growth projections will be included geographically, but not included in the analysis. We will rely on the City for the assessment of their strategies for managing future development.

Cliff McClain, Buffalo Watershed District

Q. The City of Moorhead has concerns with the Buffalo Aquifer and want to ensure that it is not impacted. A number of utilities cross the area where the concept diversion was planned, please take this into account.

A. We would ask that you provide us with information on the water utilities. Additional assessment will be performed to ensure that impacts will not occur to the aquifer. The

current alignment shows that the aquifer lies to the east of concept channel diversion, but this will be looked at in further detail.

Bruce Kreft, ND Fish and Game

Q. North Dakota has a list of conservation priorities – there may be an interest in preserving some level of flooding for the benefit of the river ecosystem. Some fish species (catfish, sturgeon) will be dependent on a natural flooding regime in certain areas. A. This has been noted and will be looked at.

MN DNR

Q. Have you looked at the MDNR Heritage Information system?

A. Yes. This has been looked at and will be utilized in the future.

Erik Jones, Houston Engineering

Q. The diversion plan is routed towards Highway 75 – there would be issues with affecting the floodplain of the Buffalo River in this area. There are also potential issues with ditch systems which would require a hearing process.

A. Please provide us of additional information.

USACE

Q. USACE: Are there other individuals that should be involved?

A. Canadian counterparts to FEMA, USACE and EPA should be involved. Officials from Manitoba should also be contacted. Tribes should also be invited to attend. Transportation officials from both States should be involved as well as Federal Highway officials. 401B Certification from the State of North Dakota will likely be necessary.

- Q. Our comments are due on June 22nd...are we commenting on diversion channels, levies, etc.? Do you want us to reiterate our comments in writing?

 A. Feel free to comment on any aspects of the project, but also provide us with additional ideas for alternatives. We will provide meeting minutes, but you are welcome to submit in writing as well.
- Q. Are you looking at executing an Official Cooperating Agency Agreement? A. We may, but we're sorting that out, but we can talk about that at future meetings.

Date: 05/20/09

Location: Moorhead State University Hanson Hall, Public Meeting

Agenda

5:30 PM Open House 7:00 PM Presentation

7:50 PM Question & Answer

Q. If the diversion project proceeded in 2012, what would be the completion date? A. Levy projects will proceed quicker than a diversion project, but everything depends on availability of funds from Congress. Three or four years would be an ideal timeline, but may be optimistic.

Q. There are two omissions in the presentation – you didn't address the land use problem. Farmers want to drain the land as quickly as possible, which is understandable, but it exacerbates flooding. Timing is also an issue if water can be retained at its origin. The time between the pre-crest level and the post-crest level was a few hours – if water can be retained even that long, the peak should decrease.

A. It certainly is an issue that is debated – especially with larger flood events. The assumption at this time is that storage will likely need to be provided through local projects as opposed to a USACE project. Would storage reduce the size and need for a super-structure? That's likely true, but it won't provide the entire solution.

Q. In 1897, the land in downtown Fargo was not built out to the river – that land was all filled in. A flood stage of 40 feet was recorded. When the Freedom Bridge was constructed, the river was constricted to a fraction of its previous width which has exacerbated flooding. If this flood occurred in 1897 without the bridge, a flood of that magnitude with the bridge would certainly be much worse. The only reason that this area was spared in the recent flood was the cold weather. The flood stage is misleading with an official change of the flood stage from 17 feet to 18 feet – this may be a conspiracy to alter the records. Levies may not help in the flooding. The flow is too restricted especially with the Freedom Bridge in town acting as a dam. Ice dams along bridges are another concern that, when they happen, will flood out the entire community regardless of the levy. Fargo-Moorhead needs the equivalent conveyance capacity to the preexisting river. Question – how do bridges constrict the flow and what is the value in building levies above the 40 foot stage?

A. We will look at a number of options including levies, diversions and non-structural solutions. Non-structural solutions include raising structures such as bridges.

- Q. Do any of your rules require that your projects be neutral down river (i.e. not making conditions worse downstream)?
- A. Those are referred to as "induced damages" and are monitored very closely. USACE will be obligated to mitigate the effects of the project that would adversely affect others downstream.
- Q. What is the impact of the Fargo Southside Flood Protection Plan? Will that area be factored into your cost-benefit ratio?
- A. We're starting to look at that and acknowledge that it is a delicate situation. The City does not want to move forward with a project and jeopardize a potential future Federal project, but still has an interest in constructing a project soon. The City could move forward with the project on their own, but will likely wait to see what happens with the Feasibility Study.
- Q. Has a study been completed that will identify the reason for the increase in flooding frequency? Could the river be dredged to create a deeper river that would increase conveyance?
- A. There has been a tendency in the past to look at straightening channels and increasing conveyance as a preferred way to construct a flood control project, but this happens at a high cost to the environment. As to the frequency, there are both wet and dry cycles over time. There appears to be a wet cycle right now, but it is unclear how long it will last. We will look at these issues in detail in conjunction with the study.
- Q. The options that you've looked at are mostly structural. Could you talk more about non-structural solutions such as buyouts?
- A. Since Katrina, the focus has changed on this issue. In metropolitan areas, the dollars add up quickly for relocation efforts. If we look at pockets or neighborhoods and problem areas, the relocation tends to make sense for structures in high risk areas. We can also look at raising homes to provide protection, but this approach hasn't been very popular in the Midwest given the high number of basements. National experts will be brought in to advise on non-structural solutions.
- Q. If bridges are a constriction along the river, why are we not looking at reconfiguring the pilings like on the LA River? Can we have a standardized measuring system for stages given that there are variations in stage measurements? I am in favor of dredging and straightening of the Red River it's legal, efficient and will be 30% cheaper. Do we want to save homes or lily-pads?
- A. Not aware of the LA River model, but we can talk to you individually about this during the open house. All of the modeling and plans will be completed in 1988 datum. There will be better continuity on stage data in the future, but there has been a reluctance locally to change. There is a national initiative to standardized datum to 1988 (NAVD 88). We have the standardization of data on this list of considerations for the study.

- Q. How do you accommodate traffic over a 2000 foot wide ditch? Why wouldn't the diversion channel go through Fargo on the west?
- A. Yes bridges will be reconstructed. We estimate at least seventeen road crossings and four rail crossings. The way the channel is configured, the bridge won't need to be 2000 feet long, but will be fairly large. We've looked at the diversion on the west and it may be a possibility, however, the Minnesota side is the shortest path from point A to point B. We'll be looking at both sides.
- Q. What impact does the Rose Creek project (the Fargo Southside Project) have on the Moorhead levies and the overall project? Moorhead still has walkout basements, could those be flood-proofed as part of the project?
- A. The Fargo Southside Project will be looked at as part of the study from a permitting standpoint, but the applicant (the City of Fargo) would be required to show that the project either does not change the stage or mitigates the impacts. Any type of levies that would be put in place through a local effort would be evaluated as a part of the study. USACE credits communities for flood protection work that is in place or will be in place in the near future. Flood-proofing walkouts may be part of a non-structural solution. (City) City supports the flood-proofing of structures but it would likely require a permit, and funding has not been identified that would be available to homeowners to do so.
- Q. Fargo and Cass County have proceeded with identifying buyouts, but Moorhead has not. What is the involvement of USACE and what is the hierarchy for decision making? A. FEMA will likely be involved in buyouts. (City) The City is looking at this issue and it will be discussed at the City Council level. Approximately 70 individuals have stepped forward for potential buyouts in Moorhead; interested parties are encouraged to contact the City. The City will seek funding from the Minnesota Department of Natural Resources as well as FEMA for future buyouts. (Clay County) For those outside of Moorhead, Clay County is also compiling a list of interested individuals.
- Q. Would the diversion have a grassed bottom or concrete? Who performs long-term maintenance? How will you ensure that the diversion does not result in a 30 mile long stagnant pool of water?
- A. Grassed bottom. USACE negotiates maintenance with the communities and that is specified in the plan and agreement. At the conceptual stage, the diversion would flow only during high water and should dry out over the summer. The details of any project are forthcoming.
- Q. Why can't you build dikes on buyout land? Why wasn't Fargo flooding addressed with the Grand Forks project?
- A. If you take money from FEMA for a buyout, you cannot build on that land at all this includes private projects or USACE projects (with few exceptions). We'll be coordinating with FEMA on our project. USACE had been working directly with Grand

Forks since the 1980's to identify flood protection for the City. It was coincidental that the flood event occurred at about the same time as progression on the project.

Q. The diversions go through dry land. Why can't they be located in areas where the land is wet?

A. This is a starting point for discussion looking at the shortest route around the City. Some people will be impacted by any project that would be constructed. Looking at a large scale solution will mean that certain individuals will have to sacrifice in order to ensure that everyone benefits to the greatest extent possible. There are real consequences to these decisions. The Minnesota (east) diversion is not the only route that can be constructed but is part of an initial look at solutions.

- Q. How did you determine where your starting point and ending point would be for the Minnesota (east) diversion? Where does the water end up?
- A. The concept is that the diversion would start at the Wild Rice River and enter back in before the Buffalo River near the Sheyenne. We would ensure that with any diversion, that the individuals living downstream will not be adversely affected.
- Q. What about wetland reclamation between Lake Traverse and Fargo Moorhead? A. Anything we can do to increase capacity in the watershed will help the problem, but not solve it. This will be looked at as part of the project and will be evaluated.